

PAUL DUNOIN

THE STAR WARS ARCHIVES

1999-
2005

TASCHEN

PAUL DUNCAN

THE
STAR
WARS
ARCHIVES

EPISODES I-III
1999-2005

TASCHEN



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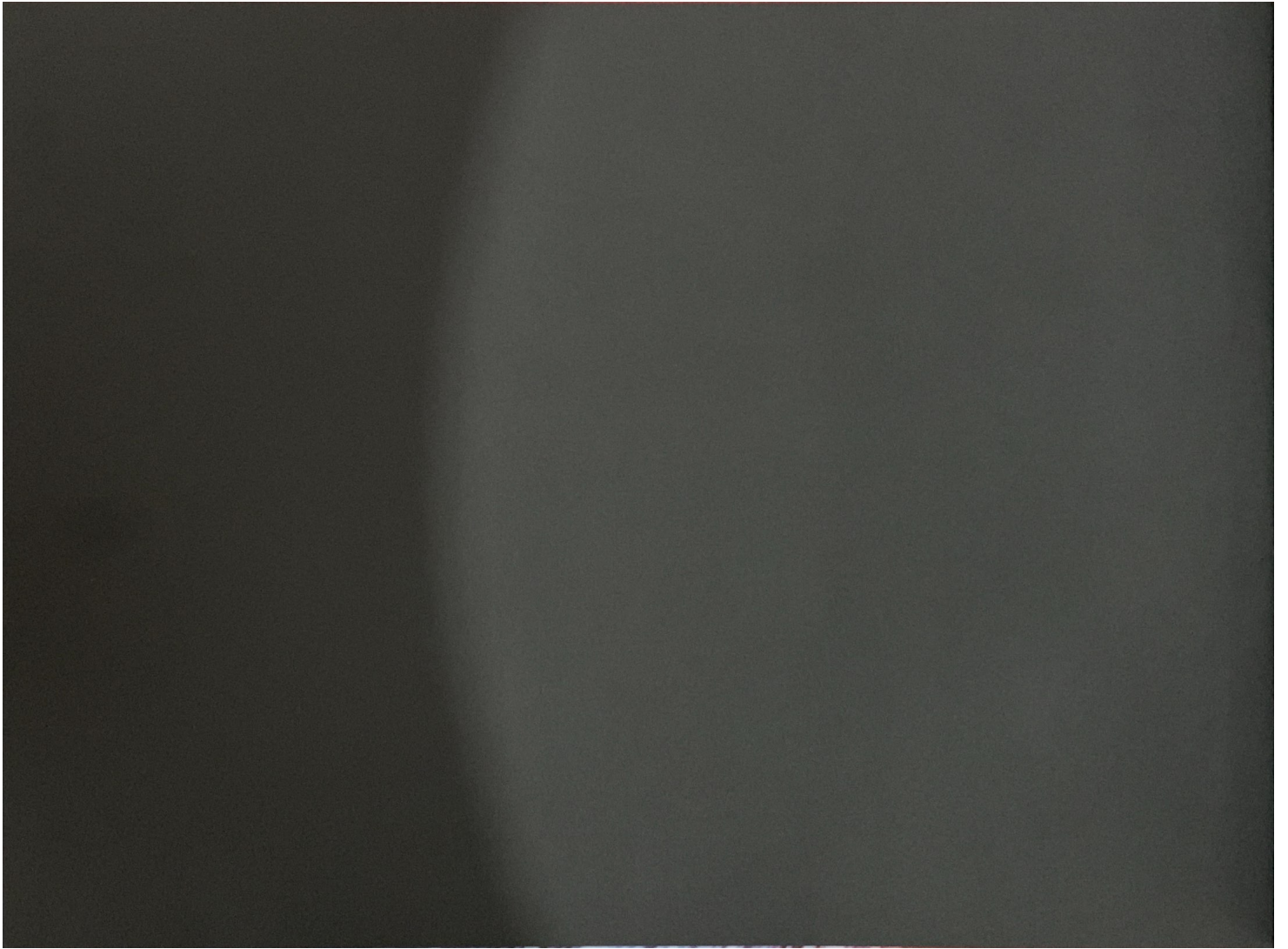


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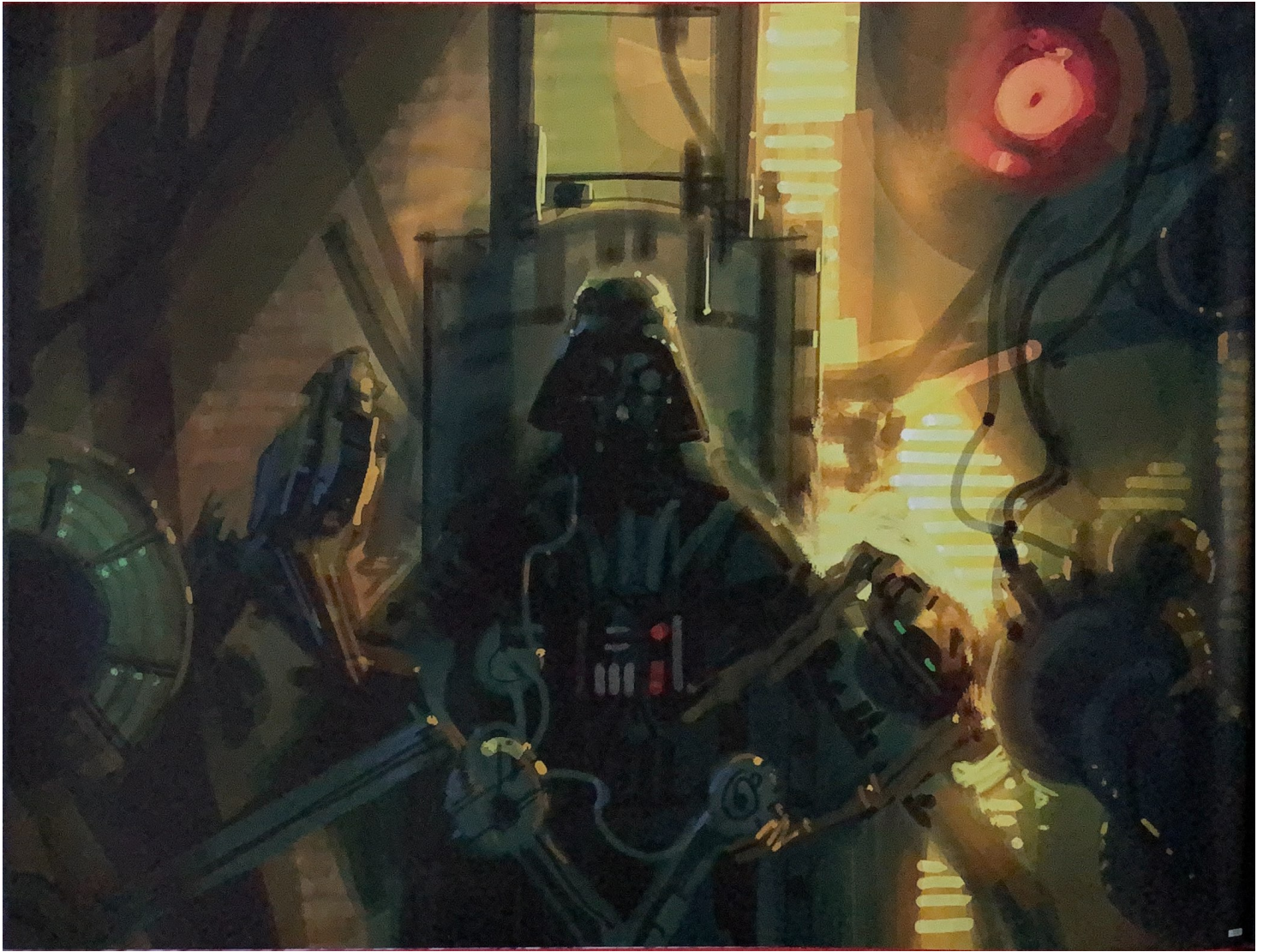
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TASCHEN



A long time ago in a galaxy far,
far away....



PAUL DUNCAN

THE
STAR
WARS
ARCHIVES

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Foreword

By George Lucas (1999)

Movies are an illusion. Cinema is the art of the moving image; the moving image isn't any more truthful than are cave paintings, or hieroglyphics, or the Sistine Chapel. What the artist finds is the truth behind the "truth." Art portrays the aspirations of the society in which it is made.

Two of the most important things human beings do are expressing themselves and communicating with others. How they do that and how clever they are in doing that have always been some of humanity's major accomplishments. Children learn to scratch on rocks just as the cavemen did. And even though the technology is extremely simple—it's a stick and a rock—part of human nature is to innovate, to figure out better ways to do things.

I'm not that keen on technology. I'm a storyteller, but to enable me to tell my stories, I've had to develop the necessary technology. After all, to do a moving portrayal on a cave wall of a dying bison, early man had to invent red paint.

While doing *Star Wars*, I was very limited in what I could achieve in terms of the story's scope. I couldn't show large street scenes; I couldn't have alien characters that were not anthropomorphic walking around on the streets. I couldn't have them as characters. Throughout the making of the *Star Wars* films, I was struggling with such questions as, "How do I create Jabba the Hutt? How do I create a Yoda, who's only a foot and a half high, and have him believably play a scene?" I could imagine these characters, but I couldn't realize them. It took a lot of effort and talent on the part of many people to manipulate the puppets, latex, and remote-control systems that allowed us to create these creatures. Even then I was unable to move them around to any significant degree.

With the digital technology available today, I've finally reached a point where I can move such characters freely on a set, and I can get better, more dramatic performances out of them. That's been my challenge. It's the same with sets. In the past, I couldn't afford to go to a place in the story that would involve a very large set. Now I can expand the environments in which I'm able to place my stories, which is obviously very important in the fantasy genre.

I put the brakes on my imagination when I was writing the original *Star Wars* because I wanted to write only what I knew I could realize on film. And even then, I was writing things that I wasn't quite sure I could create on-screen. And therein was a large risk. I have taken those risks on all the *Star Wars* movies, and I'm taking them on Episode I: *The Phantom Menace*. Can I pull this off? But the idea of being able to explore my imagination and make it literal is exciting; it moves me forward to try to get my visions onto the screen.

Art Is Technology

In the 20th century, cinema was celluloid; the cinema of the 21st century will be digital. Movie theaters are going to have better presentation, seating, and entertainment services. And the quality of the experience in terms of the sound and the images on-screen will increase—especially when theaters become all digital. You'll have a better, clearer, more realistic moviegoing experience.

Digital technology will bring down the cost of making movies. More people will have access to rendering epic or fantasy stories. It used to be that literary genres such as science fiction and fantasy couldn't be portrayed adequately on film because they had

to be shown as opposed to suggested in words, as they are in books. The gap between those two media is going to close up.

Black-and-white silent movies will still be made, even in the digital era, because there are a million ways to tell a story. The creator's palette has been continually widened. It was the same with painters during the Renaissance, most of whom were technologists because of the huge emphasis on creating new colors and different ways of dealing with plaster and metal. Artists have always been coping with the limits of technology.

When French director Georges Méliès showed men on the moon in 1902's *A Trip to the Moon*, it was the first time anyone had tried to make the unreal real in a moving photographic medium. That magic trick was the start of an art form. *King Kong*, in 1933, was a landmark in stop-motion photography. The art of moving puppets was then perfected in the '60s and '70s with Ray Harryhausen's *Jason and the Argonauts* and *Sinbad* series. Stanley Kubrick's 2001: *A Space Odyssey*, in 1968, represented the state of the art of special effects up to that point. In 1977, *Star Wars* shifted visual effects to a different medium by introducing the use of computers. The pivotal moment in the digital cinema was ILM's realistic dinosaurs in *Jurassic Park*. But this achievement was inspired by all those that came before, from *King Kong* to Harryhausen's puppets. In the animation medium, John Lasseter's *Toy Story* team delivered extraordinary acting in an entirely CG (Computer Graphics) feature. I believe the next milestone will be Episode I, because it will have photo-realistic digital characters interacting with actors.

A Question of Limits

There will be limitations on what this new technology will be able to accomplish. As long as our minds have the capacity to imagine new possibilities, there will be difficulties in trying to realize them. At this point, the possibilities with digital technology seem almost limitless, but we have only started to imagine them, because we haven't really used the medium. As time goes by, our minds will open up, and we'll be able to imagine things that will hit up against the boundaries of the medium.

Computers are run by humans. It's science fiction to think that computers could make movies by themselves, or that digital characters aren't created by people. Because digital cinema is a much more sophisticated form of moviemaking, filmmakers need both

sophisticated backgrounds and plenty of inspiration. And you'll still need actors to do the voices and to perform, and whether those actors are literally actors or an animator's creation—or a combination of the two—it's still humans communicating with humans.

Film is a communications medium. And digital cinema is, essentially, the same communications medium: one human being is communicating ideas to a number of other human beings, most often through the depiction of human beings. Whether you do it digitally or photographically, it amounts to the same thing. People have said, "Gee, digital cinema isn't like real cinema. It's phony. It's not real." Well, that's one thing you can depend on: film is not real.

Nothing you see on a movie screen is real. It never has been, and it never will be. The images have been manipulated by some filmmakers to be what they want them to be. Cinema is a highly technical medium: by running celluloid through sprockets and exposing it to light, you have a chemical photographic process that is manipulated a million different ways. In movies, the characters are just actors playing parts, and the sets have been built by a crew. They're phony, they're backdrops. Nothing in a movie is real.

And a digital back lot is no different than a real back lot. You're just using numbers instead of two-by-fours. The stories are what you're trying to communicate: they have to have some insight into human behavior—the way we live, and most importantly, our intellectual and emotional ideas. These things—whether you're using a stage or music or words or paint on a cave wall—are always the same.

- 0.1 *Revenge of the Sith* (2005) Concept art by Erik Tiemann, dated January 16, 2003, showing Anakin Skywalker being rebuilt as Darth Vader.
- 0.2 *Revenge of the Sith* (2005) Ryan Church concept for the climactic duel between Anakin Skywalker and Obi-Wan Kenobi on the lava planet Mustafar.
- 0.3 *Revenge of the Sith* (2005) George Lucas poses with many of the computer-generated characters and objects that populate the prequel trilogy.
- 0.4 *The Phantom Menace* (1999) George Lucas filming on location in Tunisia. Despite the latest technology, the production was still subject to the whims of the weather—a storm ripped through and destroyed sets and props just as one had done while filming *Star Wars* in 1976.





FABULOUS 23-96
ROTJEDI: "JABBA ROCKS"
GREEDO, Fagin Bear, Mouth Doole, Drappy McCard

The Special Editions

By Paul Duncan

George Lucas I've never been that interested in computers. I'm interested in making movies and creating images and in doing it the easiest way possible. When you start out making movies you're trying to get the largest vision with what amounts to a limited amount of resources, so it's a constant struggle to add more colors to the palette. The way to get more colors is to spend huge amounts of money.

With *Star Wars* the technology did not exist to pan and move with miniatures, but that's what the story was. The only way you'll get there is to create technology that will bring those colors into the realm of what's achievable, and that's what ILM was.

Lucas invested \$500,000 to start Industrial Light & Magic (ILM) in Los Angeles on June 1, 1975.

George Lucas John Dystra came up with the idea of using computer-controlled motion on a camera so that we could do what you can do in animation. The idea was to build a live action *Ozberry*.

Ozberry animation stands had a camera mounted above an image fixed to a table. The camera could move on a track, as could the table, but they moved in a controlled manner so that the image stayed in focus. Dystra's idea was to put the camera track on the ground, replace the table with a model, and to program the movements of both with a computer system so that they were repeatable.

George Lucas We also talked about using computer graphics. I had been aware of the work of John Whitney Sr. and others since my days at USC film school.

In February 1976, Larry Cuba, who had worked with John Whitney Sr. on *Arabesque* (1976), was hired to supply an 83-second (2,000-frame) 3-D computer graphics (CG) animation of the Death Star and the trench run, so that it could be rear-projected onto a screen in the UK during filming. Cuba worked at the Circle Graphics Habitat of the Chemistry Department at the University of Illinois at Chicago.

Larry Cuba My assignment was to simulate the pilots' mission with a point of view shot from the approach to the flight down the trench on the surface of the Death Star.

Using a Vector General 3-D cathode ray tube display connected to a DEC PDP-11/45 minicomputer, which has 256 KB of semiconductor memory, Larry Cuba, T.J. O'Donnell, and Tom Chromicz programmed using Thomas A. DeFonti's GRASS graphics language.

Larry Cuba I worked from a photo of a matte painting of the Death Star and created a computer picture by combining a number of

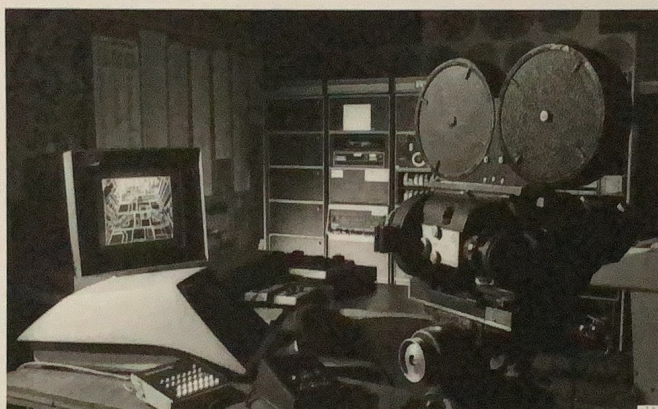
circles and arcs. This computer-drawn picture can be animated and controlled in real time. I had to continue the pilots' view of the flight down the trench to the target at the end. The trench was made of hundreds of modules. I worked from photographs of the six basic modules and the trench as it was being constructed.

First a computer representation of each module has to be made. This process is called digitizing. A photograph of each

module is placed on a data tablet. Each time the pen is pressed, the XY coordinate (the position of that point) is entered into memory. The object being created appears on the screen and a cursor indicates the current position of the pen. The height of the point, or the Z coordinate, is entered separately by selecting one of the function buttons. Another button specifies whether or not a line is drawn between points, and the display reflects



- 1.1 *Return of the Jedi* (1997): Terryf Whillatch's concept for the "Jabba Hark's" mural number, dated January 23, 1996, record for a "Vulcanus" alone from George Lucas.
- 1.2 *The Star Wars Trilogy Special Editions* (1997): This poster has new Drew Strassan artwork for all three movies.



- 1.3 Star Wars (1977) As each frame of the trench run was drawn in real time by the computer and projected on the display, the camera automatically photographed the image onto 35 mm film.
- 1.4 Star Wars (1977) Larry Cuba digitizing the Death Star module by recording the vertices on a graphics tablet.
- 1.5 Triple-I (1978) This digital X-wing fighter, dated October 13, 1978, was constructed from 60,000 polygons by Ari Durlinski.
- 1.6 A New Hope (1997) Notes from the first meeting about the Special Edition, dated December 5, 1993. Although the initial brief was to make minimal changes, the changes became more detailed and elaborate as the project progressed.
- 1.7 A New Hope (1997) The conservation and release process. Existing film negatives (A-roll) and previously unused 1977 negatives (B-roll) were combined with new optical replacements (C-roll), then VCR (yellow-cyan-magenta) separation masters were made for preservation and for reproduction. This is where each color is printed in black-and-white so that it will not fade like color dyes. Interpositives (IN) were run off for multiple 35 mm and 70 mm release prints to be made.
- 1.8 A New Hope (1997) Digital matte artist Paul Huston, who had been a model builder on the original film, photographing Ben Kenobi's dwelling. Huston: "Ben Kenobi's hut was my design. I built a model and photographed it, and photographed a model of Luke's landspeeder to use as source material."
- 1.9 A New Hope (1997) Huston scanned the images from his 35 mm still camera into the computer and used them as the basis for his digital matte painting of Ben's house.

this. With the six basic modules stored in the computer I wrote a program to combine these modules into larger U-shaped structures. Over 50 U-shaped sections were constructed and stored.

For the filming process, each shape is shown in perspective and combined with four others to form a single frame, which takes about two minutes in real time.

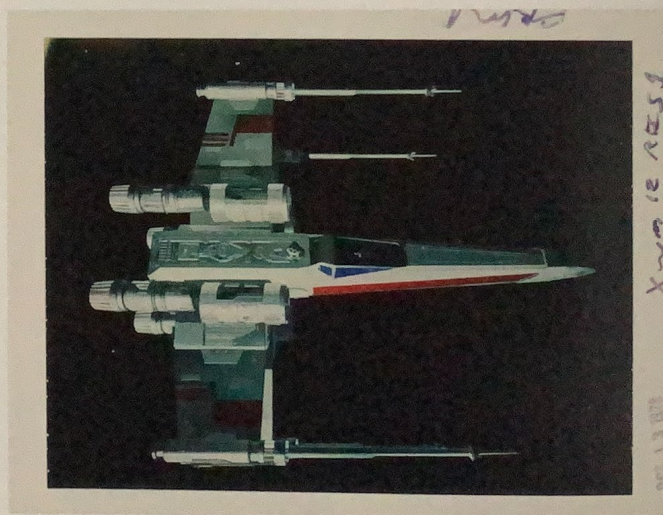
The Vector General display and a Mitchell camera were set up so that as each frame was drawn by the computer the camera automatically photographed the screen onto 35 mm film. The process was repeated 1,999 times. It was the first computer-generated shot in Star Wars.

George Lucas It became obvious that there was a future for this technology. So I kept up with what John Whitney and other people on the computer side were doing.

Triple-I

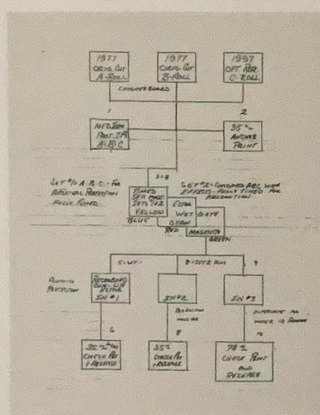
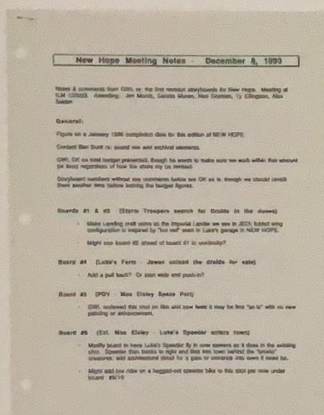
In September 1978, ILM began setting up operations in San Rafael north of San Francisco, in preparation for filming visual effects (VFX) for Star Wars: Episode V The Empire Strikes Back.

The major problems for the VFX shots on Star Wars had been matte lines—the dark lines that show misalignment when combining several images and their mattes on the optical printer—



"A lot of the technology I'm most interested in has to do with fundamental changes in the filmmaking process. My whole intent has been to make the making of a film more facile so I can better utilize my resources to tell bigger stories in quicker and more interesting ways."

George Lucas



and the loss of image quality because the final image is copied onto another piece of film. The process would be more difficult on the new movie since scenes on the snow planet Hoth and Cloud City would require mattes to be created against light-colored backgrounds. ILM wanted a digital film printer that could scan film, manipulate the images on a computer to eliminate matte lines, and print the images to film without loss of quality.

Gory Demos and John Whitney Jr. of Information International, Inc. (Triple-I) proposed to supply the printer as well as computer-generated animation to replace the miniature models. In fall 1978, Art Durlinski constructed an X-wing from 60,000 polygons. In spring 1979, a version of the X-wing was made using fewer polygons for use in an animation test.

Arl Durlinski Rendering and animation was done by Gary Demos utilizing the TRANEW software written by Gary, Jim Bärn, and others.

The test shows five X-wings flying in space, breaking formation and each performing acrobatics—a shot that would be very difficult

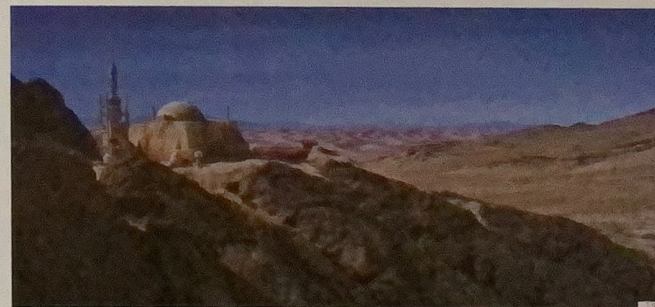
to execute with miniatures. Unfortunately, Triple-I could not deliver the animation within the \$7,000 per minute budget or supply a digital film printer on schedule, so the agreement was terminated.

George Lucas At that point I wasn't as interested in 3-D animation as I was at getting to the core issue, which was, "How do you get info and out of the computer?" That was the big problem.

The Computer Division

George Lucas I'm an editor and I hated the process of editing film. Every take is on a little roll. When you want to find something, an assistant editor looks it up in a catalog, goes to a shelf on a wall, and finds the roll of film. This roll is put on a reel so that you could see it. I don't want to sit around for hours while the assistant looks for shots.

When you're cutting, sometimes it needs to be three frames shorter, so you cut those three frames off. You have a little box in the editing suite where you keep all of those frames — we called



"When you are creating a world, part of what you do is for plot movement, and part of it is for your own personal interest and psychological eccentricities. I think dewbacks were put there out of whimsy. I wanted to do things that weren't predictable, like having stormtroopers ride dewbacks."

George Lucas



1.10

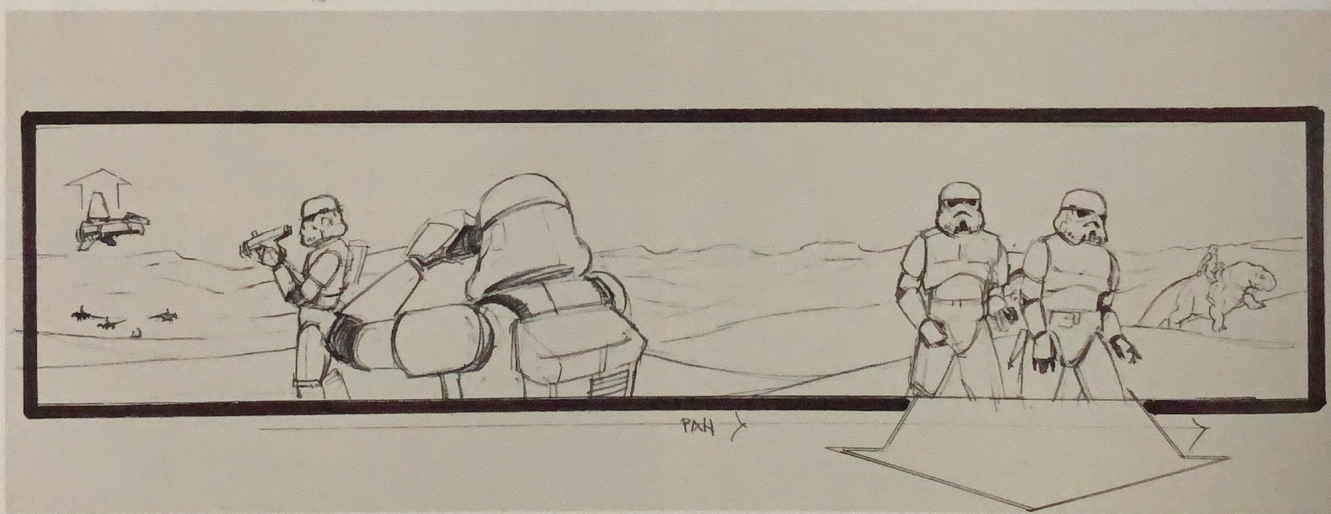
- 1.10 A New Hope (1997) Terry Whitlatch provided color concepts for the dewbacks in 1994.
- 1.11 A New Hope (1997) Richard Miller sculpting a dewback maquette using Whitlatch's art as a reference.
- 1.12 A New Hope (1997) The maquette is scanned to create a 3-D wireframe model, shown in top, side, and front elevations in this screenshot of the software. A plastic skin covers the wireframe in the camera view at top right.
- 1.13 A New Hope (1997) TyRuben Ellington's storyboard, dated May 3, 1994, of the shot later designated TDI. Note that an Imperial shuttle (left) has unloaded dewbacks and stormtroopers.
- 1.14 A New Hope (1997) Although existing stormtrooper costumes were used in the new shoot for TDI and TDE, ILM also needed to create new suits for background rounds in Mos Eisley.
- 1.15 A New Hope (1997) The final frame of new shot TDI includes live-action stormtroopers filmed in Yuma as well as a CG Imperial shuttle and a CG dewback and stormtrooper.



1.11



1.12



PAH

1.13

them smidgies—and sometimes you'd want to put some of those frames back, and you'd have to go searching through the smidgy box. It was annoying and very time consuming.

This is insane. You should be spending your work and your effort on the film, not on the technology of how you do it.

Paul Duncan You wanted to be as quick as your train of thought?

George Lucas Yes, it breaks up the flow. And editing is about flow. This is why I wanted to build a digital editing system. The studios and the editors weren't going to do anything about it so I said, "I'm going to spend the money and make it happen."

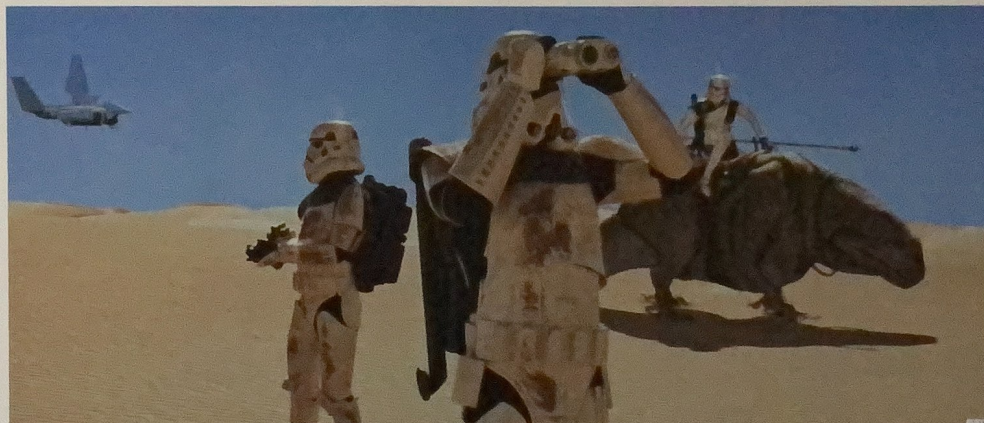
In July 1979, Lucas used his income from *Star Wars* to invest in a research and development division at Lucasfilm Ltd., separate from ILM.

George Lucas I hired Ed Catmull of the New York Institute of Technology to run the computer division for me. I had a shopping list of things I wanted to accomplish: a digital sound mixer, a digital editor, a digital film printer, and a computer that could do photoreal art.

A hard disk-based, nonlinear audio editor called *SoundDroid* was developed between 1980 and 1987. *SoundDroid* could store, edit, mix, and process different sounds thanks to a high-speed audio-signal processor. One prototype was made and it never sold.

EdiDroid debuted at the National Association of Broadcasters 62nd annual meeting in Las Vegas in 1984.

Ed Catmull While George wanted this new video-editing system, the film editors at Lucasfilm did not. So when it came time to test our work, the editors refused to participate.



George Lucas Ben Burtt is a key factor in all this. He was a first adopter of *SoundDroid* and *EdiDroid*, and he later cut *The Young Indiana Jones Chronicles* on the *EdiDroid*.

Ben Burtt You'd shoot on film and do a transfer of the dailies to videotape. A time code would be put on the video so that you could use that later to cut the correct piece of film. The videotape would be copied onto two laser discs—a laser disc could hold about 30 minutes. We would log each take then queue up shots on the *EdiDroid*. When you press play, you're watching a live playback. Compared to waiting 30 minutes to find a film roll, waiting a second for the *EdiDroid* was like, "Wow. It's right there."

I was their test pilot for three or four years. I cut an EPCOT film, *The Seas* (1985), on the *EdiDroid* as well as the IMAX films *Nagana* (1986) and *Alamo: The Price of Freedom* (1988).

George Lucas The *EdiDroid* was the birth of nonlinear filmmaking. It allows you to cut three frames off and edit in whatever way you want. They're not in the smidgy box. You just

push a button and you can find them again. The whole movie is available, all the time. It's vastly different and I think vastly better.

Lucas's priority was a high-resolution digital film printer, but what resolution was required? After extensive tests, they found that the resolution needed was 3,000 x 2,000 pixels per image.

Ed Catmull Alvy Ray Smith's team set out to design a highly specialized stand-alone computer that had the resolution and processing power to scan film, combine special effects images with live-action footage, and then record the final result back onto film.

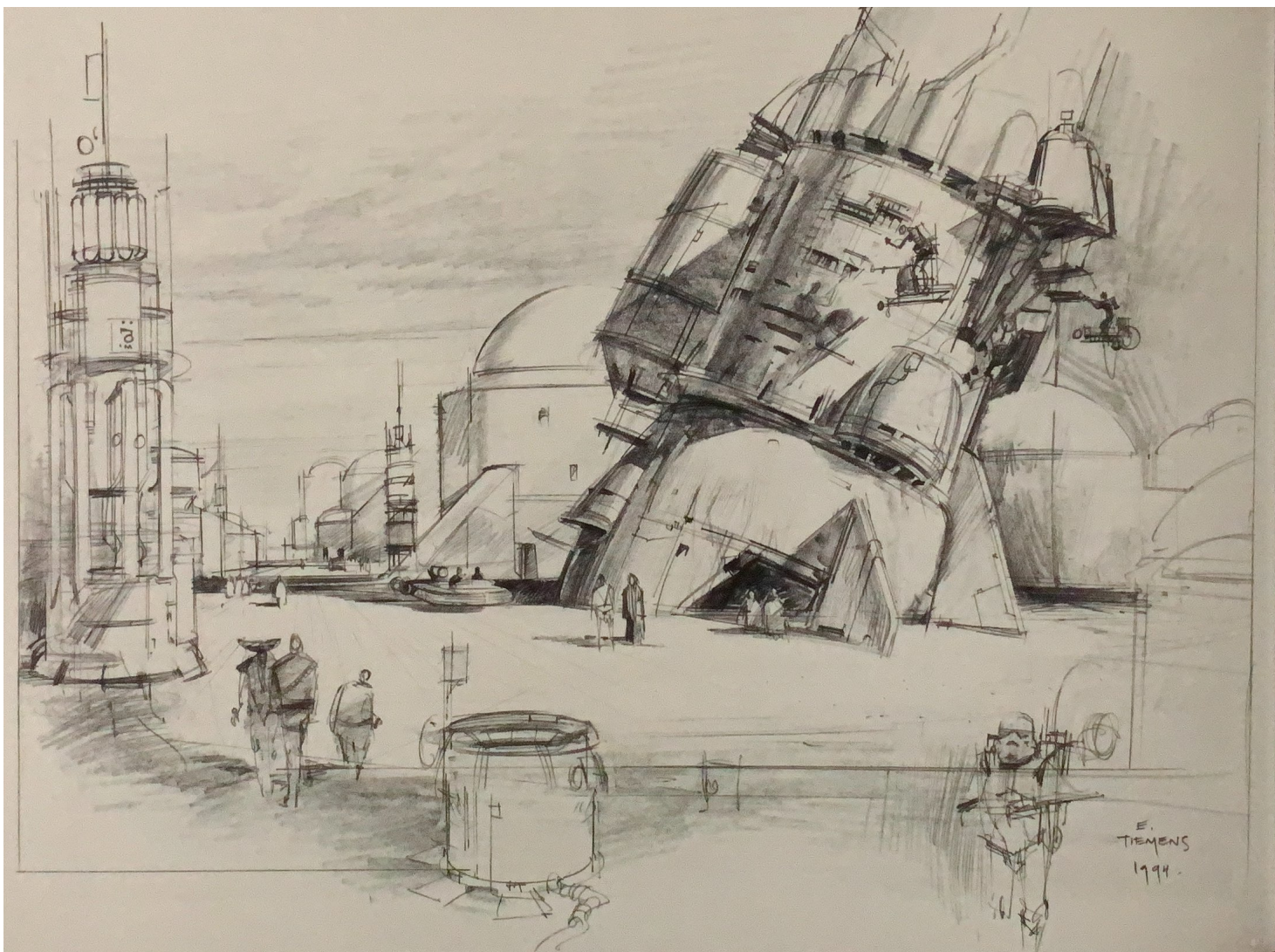
It took us roughly four years, but our engineers built just such a device, which we named the *Pixar Image Computer*.

There were limitations—it took 80 days to scan a two-hour movie, and to process the data of a two-hour movie would require a warehouse full of computer equipment.

Star Trek II: The Wrath of Khan required a sequence showing a planet being terraformed. Alvy Ray Smith suggested a single camera flyby where the *Genesis Device* crashes into the barren moon, the moon is consumed by fire, then mountains, valleys, and lakes are formed, and as the camera flies away we see that the moon is completely terraformed. The shot, directed by Smith, would last 1,621 frames/57.5 seconds. Work on the sequence began in late 1981 for a March 1982 deadline.

Loren Carpenter / Computer Graphics The first view you see of a cratered moon was done by Tom Duff. He constructed a map of the craters by randomly dropping mud into a rectangle and seeing how it splashed, then recreating that on a computer. He wrapped this onto a sphere so that we could have a perspective view of the sphere from any direction.

Up until this time, objects were modeled as solid shapes with surfaces that were rendered with colors and textures. However,



E.
TIEMENS
1994.



There are objects like smoke, fire, dust, and explosions that have no solid shape or surface to model. Tom Porter and then Bill Reeves programmed the direction, speed, color, and transparency of thousands of discrete objects. Reeves generated about 10,000 of these particles per frame to model the fire.

Instead of having somebody digitally paint each frame, the REYES (Renders Everything You Ever Saw) rendering software would automatically work out which surfaces of an object were hidden, the light source, shading, and motion blur. After a month of rendering for the fractal mountains, the team made their deadline and the film was released on June 4, 1982, containing the Genesis Effect sequence, the first completely computer-generated sequence in a movie.

Young Sherlock Holmes (1985)

ILM hired Doug Kay and George Joblove to run a computer graphics department to liaise between the ILM effects supervisors and the computer division, as well as developing CG for productions using Pixar Image Computers.

Dennis Muren / VFX Supervisor In 1984, I had three sequences to do for Young Sherlock Holmes and I decided to do one sequence, which was only seven shots. In CG, the sequence showed a knight in a stained glass window coming to life. My wife, who is an artist, came up with the idea that all the pieces should be separate, floating in the air. I made it look frightening by having the inch-thick, stained, jagged glass pieces bowed out toward the priest.

If you look through a blue piece of stained glass at an orange church in the background, you can't see anything because they cancel each other out. So we decided to cheat it and have the view through be black-and-white and tinted a little bit. We started to understand that with digital we can cheat everything... gravity, shapes, light physics, and the audience doesn't see it.

1.16 A New Hope (1977) In 1977, Mos Eisley looked like one street. George Lucas wanted to add establishing shots to give the spaceport more scope, since it is the first city seen in the movie. Here Erik Tiemens provides a concept for Lucas's consideration.

1.17 A New Hope (1977) Lucas asked for a "lane rider" for the street scene and Tyllusien Ellingsson supplied this concept in May 1977.

1.18 A New Hope (1977) Storyboard MA4, dated February 2, 1975, shows a speeder bike and ships in the sky were to be added in the original shot.

1.19 A New Hope (1977) Shot MA4 was later extended to include a route being scoured by the speeder bike.

We did almost all the compositing with an optical printer because the prototype laser printer they were building was too unreliable—maybe one out of 15 might print out.

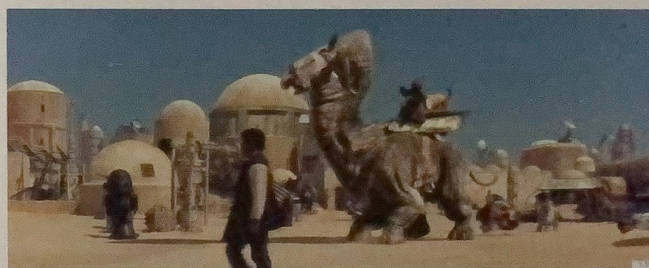
However, one shot is a close-up of the knight's hands in the foreground holding the sword, with the rest of the knight out of focus, and the camera tilts up to see the knight's head in focus. The knight was out of focus so if we composited it using an optical printer then we would see matte lines all around his outline. I wanted it to look real, so we composited it digitally.

David DiFrancesco scanned in the live-action background. Chris Evans, ILM's first digital matte painter, used the Pixar computer to work on the shot.

Chris Evans Matching colors and hiding the matte lines are always the greatest challenge in a matte painting, but in digital you can pick the exact color you want from the plate and transfer it into the

"I think it's the director's prerogative to go back and reinvent a movie."

George Lucas



painting. The blending of the matte line between painting and plate is made easy because you can control the edge characteristics and completely merge and dissolve the pixels from one side to the other.

The stained glass knight is the first CG character in a feature film.

Dennis Muren It looks amazing and nobody notices it.

George Lucas Once my primary objectives were achieved—once we had the printer and the editing system—I sold the computer division. The idea was to use that technology to advance ILM, not to start a separate company.

The computer division was sold to Steve Jobs in January 1986 and renamed Pixar.

John Knoll ILM retained some of the original equipment—three Pixar Image Computers, an Evans & Sutherland Picture System, and a Ikonas frame buffer—and we could use the software that had been developed by the computer division, like the REYES render.

Willow (1988)

Dennis Muren On Willow there is a sequence where a goat turns into an ostrich, then a turtle, a tiger, and finally into the witch Fin Raziel. The way that's traditionally done is that you see a goat, you cut away to an actor, and then you cut back to an ostrich, and so on.

John Knoll / Animation Camera Operator Dennis had a brainstorming session. I had this video of a SIGGRAPH technical paper that showed morphing between still photographs, so I ran the tape and Dennis borrowed it.

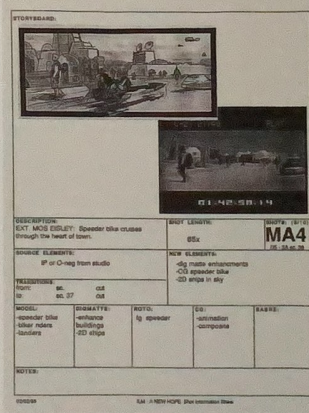
Dennis Muren I thought that to do this without cutting might be amazing. I shot animals and puppets against a blue screen, and they were made to move in a similar fashion so that the transitions were smooth. We found a little Eikonics laser scanner which shot single frames, and upgraded it with motion picture film transports and the right lenses to scan film.

With the animals now in the digital domain, rods and cables operating the puppets were painted out, and software was written to separate the animals from the blue background so that digital mattes could be created.

John Knoll Doug Smythe from Berkeley was hired to write a version of the morphing software in that SIGGRAPH paper but for moving images.

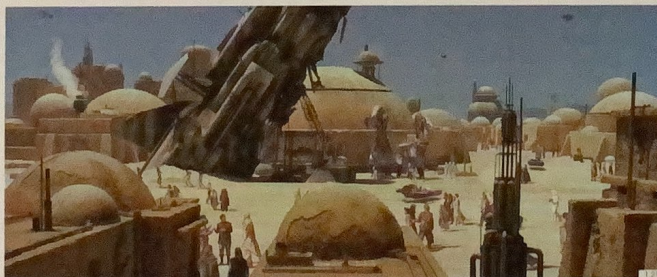
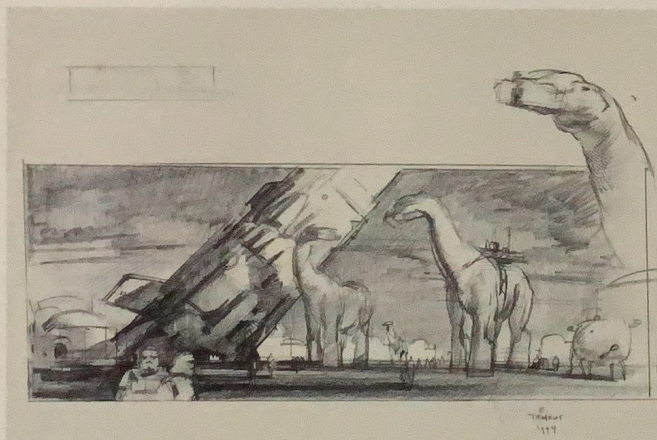
In the metamorphosis program, points and grids were superimposed over key frames of the animals, and the animators moved the vertices so that two shots overlapped seamlessly. The Pixar output scanner painted the final images of the animals, as well as the mattes, and these were then composited with the live-action background on an optical printer.

George Lucas It was the first morphing sequence.



"The Special Editions have a better quality image than the original releases."

George Lucas



The Abyss (1989)

John Knoll / Computer Graphics Designer I was hired by ILM in February of 1986 as a motion-control camera assistant, and I got a tour of the computer graphics department. They were in production on *Howard the Duck* (1986) and I saw them doing a digital wire removal on the Pixar Image Computer. I felt like I'd seen the future.

Paul Duncan Did you act on this?

John Knoll Not directly. My older brother, Thomas, was going for his PhD in computer science and was working in vision systems—how computers recognize objects in a picture. The first thing you do is process the images—equalize the image, find the edges—so he had written an image processing suite that ran on a Mac Plus. It was remarkably similar to what I had seen on the Pixar Image Computer. I talked him into bundling them into a Macintosh application that had a user interface on it. After about two months of adding bells and whistles, I thought, "This might have commercial potential." I showed it to some people and it became Photoshop.

Dennis Muren knew what we were doing on Photoshop, so he moved me over to the computer graphics department to work with him on *The Abyss*.

ILM were given their biggest 3-D animation project to date—20 shots over 75 seconds. A pseudopod of water controlled by an alien intelligence is formed from an open pool within the deep water oil-drilling operation, snakes through the corridors, meets the crew members, and then forms faces at the end of its pseudopod. A digital spine was made that defined the movements of the water creature, and a tubular grid was built around that. A ripple effect made it look alive.

Dennis Muren If you look through a water bottle everything's upside down and the edges are twisted and distorted, so you can't tell what you're looking at. On Young Sherlock Holmes I'd learned that nobody cares when refraction is shown incorrectly, so we cheated that.

John Knoll We decided to distort the background for the refraction but the reflection needed to come from everything in the room. To do that you make a six-sided digital cube around the object. When it's rendered the computer can figure out what part of the cubic environment you'd be seeing; it can then shade the pixel.

Dennis, Jim Morris, and I went on the shoot. We needed to know where the camera was in the room in relation to every person and object. For every camera setup, I'd run around with



ORIGINAL NEW HOPE "BIG STREET TUNING" TY RUBEN
ILM

a tape measure and write all the info down. When we were shooting only part of the set is lit—I'd a photograph that. When we did the reverse shots I'd a photograph the part that was lit. Once I documented everything I used pre-1.0 Photoshop to stitch them together into seamless, color-balanced reflection environments.

For the facial animation on the end of the pseudopod, Jim Cameron directed the actors at the Cyberware Digitizer at Daniel Imagineering to get the performance he wanted for the key expressions. It modified the data to identify where all the facial features were. Doug Smythe modified his 2-D morph program from Willow to work in 3-D. There was a grid over the image. You pulled points on the grid from one expression to line up with the same feature on the next expression, and the software would do the distortion and dissolve between them.

Dennis Muren That sequence came out great. After that I thought, "This looks like it has a future. We've got to pursue this thing."

Terminator 2: Judgment Day (1991)

ILM had to deliver 44 shots over 7,965 frames for Terminator 2: Judgment Day, most of the shots involving the T-1000 liquid metal cyborg with the ability to assume the shape of other objects.

Dennis Muren This time we would be able to deliver everything digitally. We could do the input with the CCD scanner.

ILM and Kodak finished building the CCD (Charged Coupled Device) scanner in 1990, which could reliably process multiple 35 mm film formats into a digital image with a maximum width of 8,000 pixels.

Dennis Muren The middle part—the animation, rendering, and compositing—we could do with the Pixar Image Computer. It we ran into problems—for example, the T-1000 was running through the garage and his shoulders were coming apart from his body—I would say, "It's four frames. Give it to Doug."

Art director Doug Chiang used Photoshop on a Mac to paint out the problems.

Dennis Muren For the digital output to film, I found the Solitaire Image recorder, which made business slides for salesmen. It's literally a camera looking at a high-resolution monitor. It got rid of the matte lines. I think at least 50 percent of the success of T2 is that there's no matte lines around the T-1000. It just looks like

It's in the shot. I thought the industry was going to explode. It didn't. People were not excited by this weird, sexy Henry Moore sculpture moving around. But when Jurassic Park came along, everybody said, "Oh my God. It's a dinosaur!"

Jurassic Park (1993)

Dennis Muren I'd never seen CG skin that looked real. I spear-headed a CG test for Death Becomes Her (1992) for the scene where Meryl Streep has her head on backwards—and the skin on that looked pretty good.

George Lucas We were slowly moving toward being able to create a 3-D photo-real character. More and more I was thinking, "Gee, I could probably do the next three Star Wars movies."

Paul Duncan When did you know?

George Lucas On Jurassic Park.

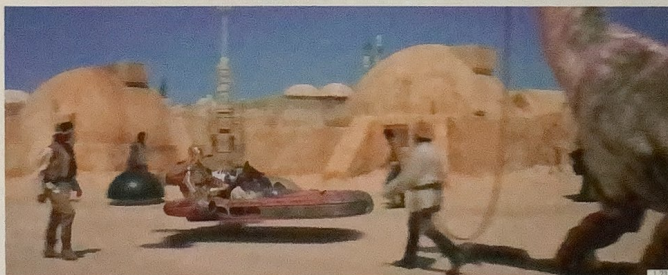
1.20 A New Hope (1997) Erik Tiemens varied the sizes of the creatures and buildings in his Mos Eisley concepts to find the combination that worked.

1.21 A New Hope (1997) Final frame of new shot CA1, showing the landspeeder on its way to the cantina.

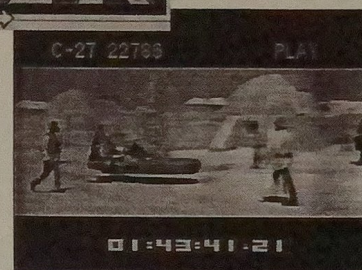
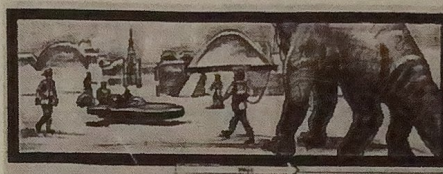
1.22 A New Hope (1997) Ty Ruker Ellington's concept for the "big street thing," which would later be named the "bronto" and finally the "rants."

1.23 A New Hope (1997) The 1977 version of shot CA2 was notorious for the average scene under the landspeeder, which caused Lucas much embarrassment.

1.24 A New Hope (1997) The storyboard for CA2. Note that the man walking at right is given a rein to make it look as though he is leading the rants.



STORYBOARD:



DESCRIPTION:

EXT. MOS EISLEY: Landspeeder moves through town. Camera pans past creature on leash as speeder passes behind it.

SOURCE ELEMENTS:

sc.46 - Vistavision O-neg
sc.45A - new ILM composite

TRANSITIONS:

from: sc.45A possible wipe (CA1)
to: sc.47 cut

MODEL:

Tall street creature

DIGMATTE:

ROTO:

matte clean up

CG:

-matchmove
-animation on creature
-shadow fix on speeder

SABRE:

NOTES:

may add dust addition to street scene

02/02/95

ILM - A NEW HOPE Shot Information Sheet

"It was always meant that Greedo fired first. In the original film, you don't get that very well. Some people thought we should leave that ambiguous, but I didn't like the idea that practically the first thing Han Solo does is gun someone down in cold blood."

George Lucas



Dennis Muren At the beginning, I told Steven Spielberg that computers are great at multiplying, so we should use CG animation to do a herd sequence. Eric Armstrong and Stefan Fangmeier did animation of the Gallimimus running. Steven was thrilled and put a stampede sequence into the script. This was the test that made the difference and gave us the confidence and funding to move forward.

Then Steve Williams and Mark Dippé did a test of *T. Rex* bones walking along—it was amazing. Later Stefan Fangmeier put the skin over it, and we did the shot in broad daylight using the Marin countryside as the background, so we're not trying to hide anything. And it worked.

The surface texture map was painted on a flat square, which was then wrapped around the digital model, so the artist had to guess how it would look.

John Schlag and Brian Kneip developed the Viewpoint software to help.

TyRuben Ellingson / VFX Art Director Viewpoint allows you to see maps on the geometry as you paint. The most difficult transition for me was that I had to paint everything flat because the shadows are created afterwards in the rendering phase.

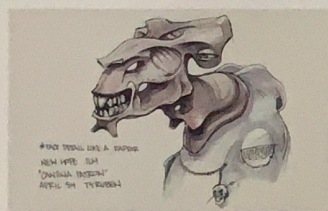
There was no restriction in camera placement since the Softimage software could match move the digital environment with the live-action plates.

Dennis Muren In total we had more than 50 CG shots—about five minutes—in the movie.

All the disciplines and parameters that make up a CG dinosaur are separate and repeatable. A model is separate from its movement, which is separate from its surface detail, which is separate from its lighting. We can change all or part of the image at will. We can tune each process until it's perfect—that's the biggest difference between CG and traditional method of optics.

George Lucas We were able to create animation of the dinosaurs so realistically that you could not tell it was animation. That was a major, major breakthrough. We could create authentic digital characters.

Before then, with Chewbacca, Yoda, and Jabba, we could only have people in masks or puppets. Yoda was the most sophisticated thing we'd done, and that really wasn't going to cut it anymore.



1.25 A New Hope (1997) **Harold Weed** sculpting Ketool in clay for the cantina scene. Weed: "The first creature to be approved was the Ketool. It was a very fast project, with the final rubber and foam puppet being complete in just over a week."

1.26 A New Hope (1997) **Lucas** wanted to replace two shots in the cantina scene where an off-the-shelf Wolfman mask was used. This concept by TyRuben Ellingson was not used.

1.27 A New Hope (1997) This is a request for the negative for shot PC1, where Han Solo shoots Greedo, to be scanned. At this stage it was intended for Han to shoot five frames after Greedo misfires. George Lucas: "We had three different versions of that shot. In one, Greedo fires very close to when Han fires. In another, three frames later, and in the third, three frames after that. We tried to figure out which one would be perceivable but wouldn't look corny."

1.28 A New Hope (1997) The storyboard for PC1 with instructions for CG laser blasts and smoke.

1.29 A New Hope (1997) Terry Whitlatch's concept art for Ketool, dated December 13, 1995, showed a full body idea (with a cameo by Salacious B. Crumb). Harold Weed: "John Knoll noticed that the back of Ketool's head looked like a different creature, so we turned it around, redressed it with new clothing, and shot it as Mefin, a separate character. Two monsters for the price of one!"

Shot	Size	Editor	Date	From	To	Scanning	Shot length	Priority
NEW Hope	PC1	D. THORNTON	1/20/96	Editorial	To	Scanning	73x2	Priority
To Go: 4-Perf. 0-Meg. to Scanning to keep and scan to create.								
Workprint is Master (Shot/Strip Scan all)								
Editor's Note: X52 is Approximate Shot Mark for Greedo Hit-Run								
X53 is Approximate Shot Mark for Han, Rango, Pet								
OPT	KEY/FRAMES/TC	Frame Resolution	SLATE	TK	REP	CAM REPORT	ELEMENT	LINE UP NOTES
LOC	10/20-198	2020 X 650	PC1	2	01	END-DEW	B.G. Plate (See 2.20 TR.2)	pc2.alph.1-72.jpg

Shot	Size	Editor	Date	From	To	Scanning	Shot length	Priority
NEW Hope	PC1	D. THORNTON	1/20/96	Editorial	To	Scanning	73x2	Priority
To Go: 4-Perf. 0-Meg. to Scanning to keep and scan to create.								
Workprint is Master (Shot/Strip Scan all)								
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OPT	KEY/FRAMES/TC	Frame Resolution	SLATE	TK	REP	CAM REPORT	ELEMENT	LINE UP NOTES
LOC	10/20-198	2020 X 650	PC1	2	01	END-DEW	B.G. Plate (See 2.20 TR.2)	pc2.alph.1-72.jpg



"If you can take a piece of film and digitize it into numbers, then you can manipulate those numbers, and put it back out onto film. There is no limit to what you could do in the middle. You can do anything."

John Knoll



The Young Indiana Jones Chronicles (1992-1996)

George Lucas One of the things we tried to do with *The Young Indiana Jones Chronicles* TV series is develop new production technology that allows us to cut costs. I wanted to be able to do a couple of hundred effects shots in every episode for under \$50,000.

Rick McCallum / Producer The series aired 28 one-hour episodes from 1992 to 1993, and four TV movies from 1994 to 1996. It was a monumental project. The first year we shot for 54 weeks nonstop, with two days off for Christmas. We traveled to 36 countries—China, India, Mexico, almost every country in Europe—with Prague as our base.

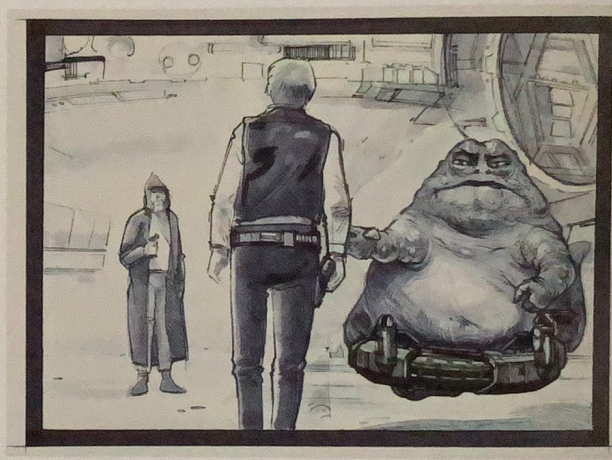
George Lucas We had a complex show to do—period settings, costumes, chases, armies, wars—an episode every 12 days.

Rick McCallum George edited in San Francisco and would say, "I need a fight sequence, and it has to run three minutes." You can't tell a director to improvise, so George would cut together a sequence.

Ben Burtt George told me to video specific shots. At Skywalker Ranch I'd put some guys in costumes, got some rifles and horses, then we did shots and fights. Very simple, quick things.

Rick McCallum This footage, cut together with a stick-figure animatic, a temp score, and sound effects, was sent to us by FedEx. The second unit director then had shots to follow.

Ben Burtt After we finished editing, Ed DiGiac would print out a list of every cut and every dissolve, which would then go to Western Images in San Francisco with videotapes of the footage. They would assemble the cut, do the color correction using Davinci software, do composites, fades, and effects using the Hairy software, and that would go to the network for broadcast.



1.30 A New Hope (1997) Lucas reinstated the scene between Han and Jabba, which had been deleted from the 1977 release. The original idea was for Jabba to be carried by a floating device, as per this concept by Claudia Mullaly.

1.31 A New Hope (1997) The wireframe model of Jabba the Hutt he moves like a sea lion. Joe Letteri (CG Supervisor): "Jabba had to throw his weight forward, bring his tail up and push off with it. We wanted him to have this big, threatening, his-weight-forward movement, so he'd feel massive and menacing."

1.32 A New Hope (1997) Storyboard JRS, dated December 3, 1993, drawn by George Hall.

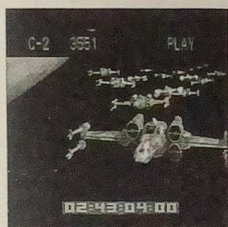
1.33 A New Hope (1997) This final frame shows how the original actor, Declan Mulholland, was completely replaced by the CG model of Jabba. Steve Williams (Animator): "It took about a year to do the five shots."

1.34 A New Hope (1997) Shot SBI was remade in a computer by John Knoll and only Ralph McQuarrie's matte painting of Yavin remains of the original image.

1.35 A New Hope (1997) Many of the painted mattes were redrawn as digital mattes for the Special Editions. Here the Millennium Falcon is photographed so it can be used for the scene where it is in the hangar of the Death Star.



STORYBOARD:



DESCRIPTION:		SHOT LENGTH:		SHOTS: (14/15)	
EXT SPACE: New Rebel fleet reveal.		258x		SB1 R11-BA KC 5051	
SOURCE ELEMENTS:		NEW ELEMENTS:			
VV C-neg - Yavin (1) - reference/mapping		Starfield X-wing Fighters Y-wing Fighters Deathstar model Yavin model/composite			
MODEL:	DIGIMATTE:	ROTO:	CG:	SABRE:	
(25) X-wings Y-wings			Choreograph, animate & composite		
NOTES:					
Roto with better lighting, detail and much more dramatic move.					

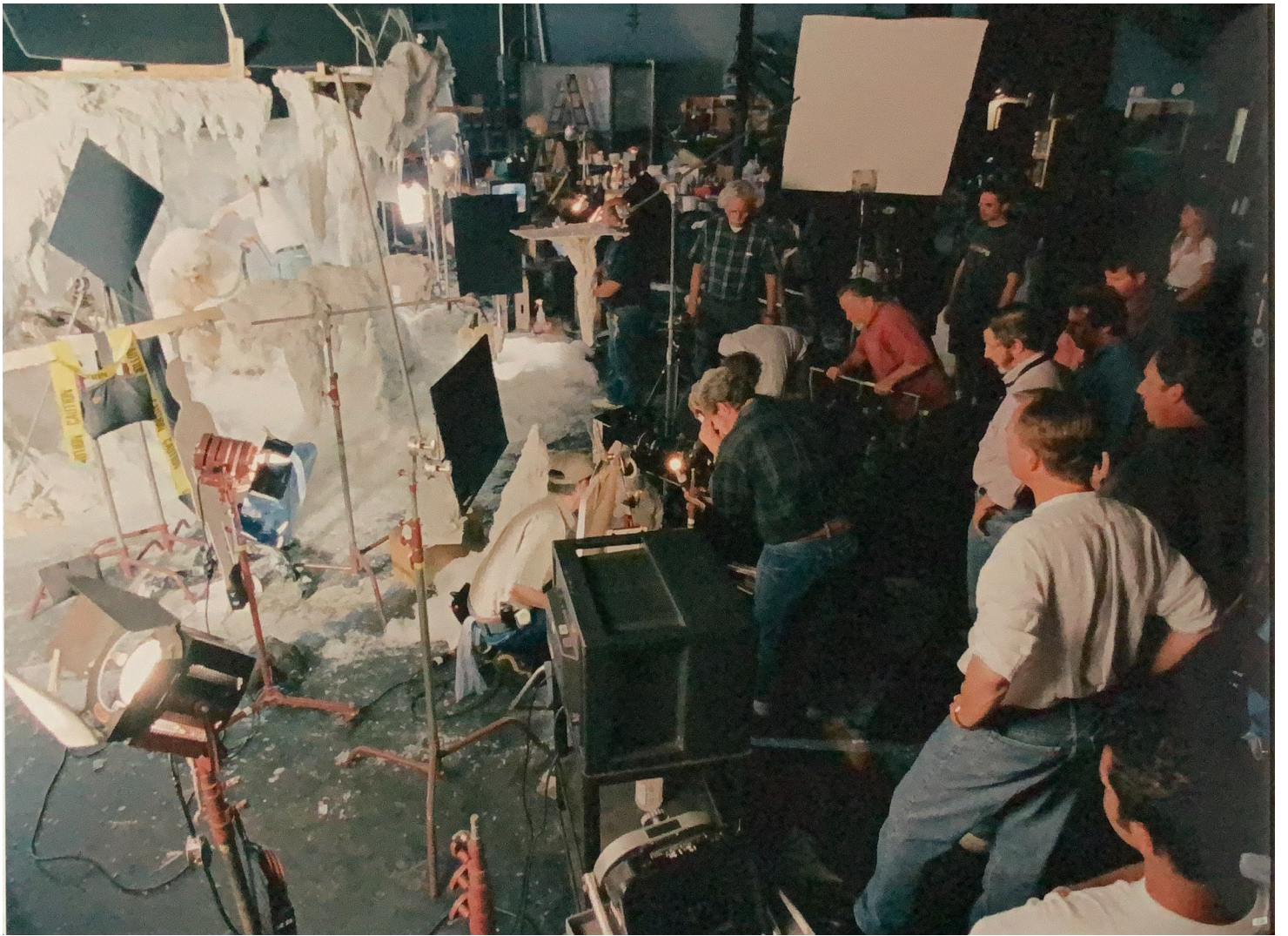
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ILM - A New Hope Shot Information Sheet

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1/35



"A hundred years from now, the only version of the movie that anyone will remember will be the Special Edition. The other versions will disappear. Even the 35 million VHS tapes of Star Wars out there won't last more than 30 or 40 years."

George Lucas



- 1.36 The Empire Strikes Back (1997) The wampa was only seen briefly in the 1980 release, so George Lucas (center, looking through camera) filmed additional shots in the cave. Between takes chief creature maker Harold Wood, who played the wampa (left), was supplied with air via a tube.
- 1.37 The Empire Strikes Back (1997) Harold Wood and creature maker Mark Stegel test the wampa hand holding the meat. Work on the wampa head (at left) is in progress—the tubes are used to control the facial expressions.
- 1.38 The Empire Strikes Back (1997) Final frame of the wampa feasting.
- 1.39 The Empire Strikes Back (1997) Harold Wood in costume. Wood: "Sculpting and foam construction of the creature suit took about six weeks, and kept myself and three other ILM artists busy full time."

George Lucas In the early 1990s, electronic media for TV was more advanced than for film. For example, you sit down with a color timer, roll through the movie, pause it and then say how you would like to change the color. I was able to color time every shot. You could not do this with film.

Rick McCallum For film, they'd roll the movie with a footage meter at the bottom of the screen. They can't pause it, so you have to look at a shot, look at the footage number, and say to the guy, "I want that shot to be a little bit darker..." all at the same time.

George Lucas With something like *A New Hope*, where there's a lot of fast cutting, you can't talk fast enough.

Rick McCallum You'd have to redo it four or five times. It was nuts.

George Lucas Another example: we shot footage in Africa, and after we shot footage in London for six weeks an actor lost his tan so he didn't color match. I could put a little circle around his face and give him a tan. It was great.

I was excited and said, "This has got to be in movies," but people were resistant and said the resolution wasn't very good.

I said, "You're crazy. The quality is in what you can do with it, not the resolution."

Rick McCallum I cannot explain to you just how liberating it was. If we only had a medium shot of an actor we could just enlarge the digital image 15 to 20 percent and we'd have our close-up.

Paul Duncan So did you flap people and places, paint people out, patch people in?

Rick McCallum Everything. George even replaced people's eyes so that they blinked at a different time.

George Lucas I learned a new way of making movies.

Radioland Murders (1994)

George Lucas We wanted to test what we'd learned shooting on 16 mm film for *Young Indy* to see if we could do it on 35 mm for a feature film, on a budget.

As for *Young Indy*, we had partial sets and there were a lot of set extensions and digital mattes. For example, the end of the film is a *King Kong* parody in the tower over the radio station, but we shot the scenes on a parking lot and then painted the tower in.

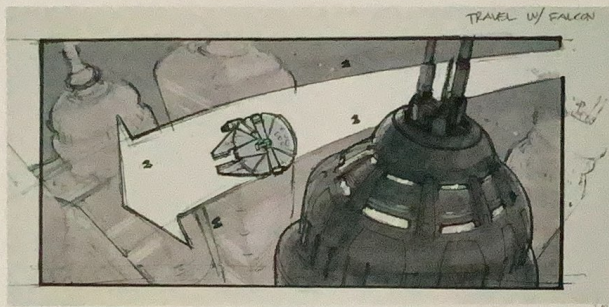
I sold EditDroid to Avid in 1993, so I edited *Radioland Murders* on an Avid.

Rick McCallum For postproduction, instead of using Harry we upgraded to ILM's Sabre System, which had all the editing and compositing features, but it worked at high resolution and at



"I spent money developing technology, but I don't want to see the equipment. I only want to see the shots for the movie."

George Lucas



speed, so you could see the results quickly instead of having to wait overnight for it to process.

Ben Burtt This was where all the seeds got planted that later blossomed on *Star Wars: Episode I—The Phantom Menace*.

A New Hope Special Edition (1997)

George Lucas Nobody ever really finishes their movies; they're abandoned. If you talk to any filmmaker, they'll say, "We were racing toward the end and I wanted to do this and that, and they wouldn't let me finish it." Finally, they grab it out of your hands and release it. I was not happy with *A New Hope*. I was still mixing and we were still sticking shots in after the film came out.

Phil Feiner / Pacific Title George wanted us to fix the shot of the landspeeder going over the desert. There was a mirror along the bottom of the speeder reflecting the desert floor, but you could see it. I put a piece of clear cel across the aperture of the optical printer then put some Vaseline on the cel to diffuse the mirror.

George Lucas There are two or three shots that are really bad, and I know that the movie is going to be judged on that. I was embarrassed. In 1993, the 20th anniversary was coming up, and that was the impetus for doing a Special Edition of *A New Hope*—to bring it up to the standard we were aiming for.

On December 7, 1993, George Lucas reviewed proposed storyboards drawn by TyRuben Ellington, George Hui, and Erik Tiemens.

Tom Kennedy / VFX Producer The meeting identified 24 shots to flesh out some of the scenes. One of them was when the stormtroopers find evidence of droids on Tatooine. The scene is done in one shot—it starts on a rubber dewback on a desert ridge, pulls back to reveal stormtroopers, and one pops up from bottom of the frame, holds up an O-ring and says, "Look sir, droids."

George Lucas When we shot that in Tunisia in 1975, my idea was to put a stormtrooper on a dewback and have him ride across the desert. The dewback couldn't walk, so was fitted with a long piece of wood so that we could swivel its head. Now I could use CG to make the dewback walk.

Tom Kennedy We created two additional shots: an establishing shot, where in the background you see an Imperial shuttle take off after having theoretically deposited the dewbacks and the stormtroopers. The second shot is the reverse angle, stormtroopers walking away from camera, which establishes that they're out searching. Then we pick up the original shot of the film.

Other shots included set extensions of the Lars homestead and Mos Eisley, additional shots showing the entry into Mos Eisley, as well as the scene between Han Solo and Jabba the Hutt at Docking Bay 94 that had been cut from the first release.

Before any work could be done, the original negatives had to be found and conservation work carried out. Ben Burtt and Dana Mulligan investigated the whereabouts of the archival elements.

Ben Burtt / Memo / February 10, 1994

- 1) We confirmed that the original negative for the final cut of *Star Wars* is in the vaults of 20th Century Fox.
- 2) We found the missing Han/Jabba scene AA53 with one of the TV documentaries. (From *Star Wars to Jedi: The Making of a Saga*, 1983)
- 3) We collected all the original workprint reels.
- 4) We have all the sound elements to recut and remix the reels we are changing.
- 5) We have paperwork which will help us to locate VistaVision and other neg in the ILM vaults.
- 6) We are missing the final negative cut list which lists each final shot in the cut film.
- 7) Many of the shots we want to change are part of wipes. This means we not only want to find the original neg for the shots we are changing but also the neg for the A or B side of the wipe, as well as the mattes for the wipe.

Ted Gagliano / Postproduction Executive We made a print from the original *Star Wars* negative at Deluxe Labs in 1994. I flew up to Lucasfilm to show it to George and it was the worst screening of my life. I was absolutely terrified because it was a really lousy, faded, dirty print.

George Lucas It had deteriorated a lot more than people had expected in 20 years.

Rick McCallum The original negative was so far gone that unless we did this work now we would never have the film to release ever again.

Leon Briggs / Film Restoration Consultant The digital and editorial crew was at ILM and Skywalker Ranch in Marin County; the film restoration crew was at YCM Labs (color timing), Pacific Title (recompositing opticals) and Sunrise Films (restoration) in Los Angeles, and we did some work with Technicolor (rewatching) and Deluxe. So it was a coordinated effort to keep track of all the elements and where they are. The original negative looked about 10 to 15 percent faded, and had a lot of dirt on it that had never been washed off, so we needed to rewash it. We got an 80 percent improvement on the dirt levels.

Pete Comandini / Film Restoration Supervisor Most of the VFX shots were dups and had to be replaced.

Leon Briggs There were over 950 optical composites, but because Tom Christopher's group was able to locate all the original VFX negatives these were recomposited, so we had clean original negative on anything that was recomped. We put 102 original shots back into the show to replace dups, so in a lot of cases you're seeing the original camera negative instead of the dups that were in the previous releases of the movie.

Tom Christopher / Editor We needed to find a source for the color timing that was within a range of acceptance for George, so that everyone could match to it.

Ted Gagliano George had an imbibition print in the basement of his home, which was made by Technicolor in the 1970s.

Phil Feiner The dyes don't fade using the imbibition method.

Ted Gagliano For the color timing he told us to go for that look. "That's the *Star Wars* I made," he told us.



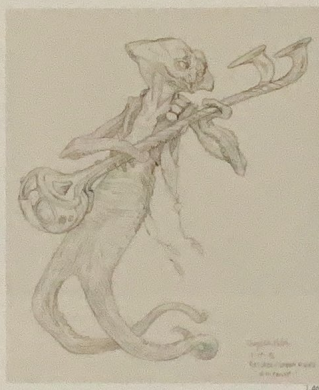
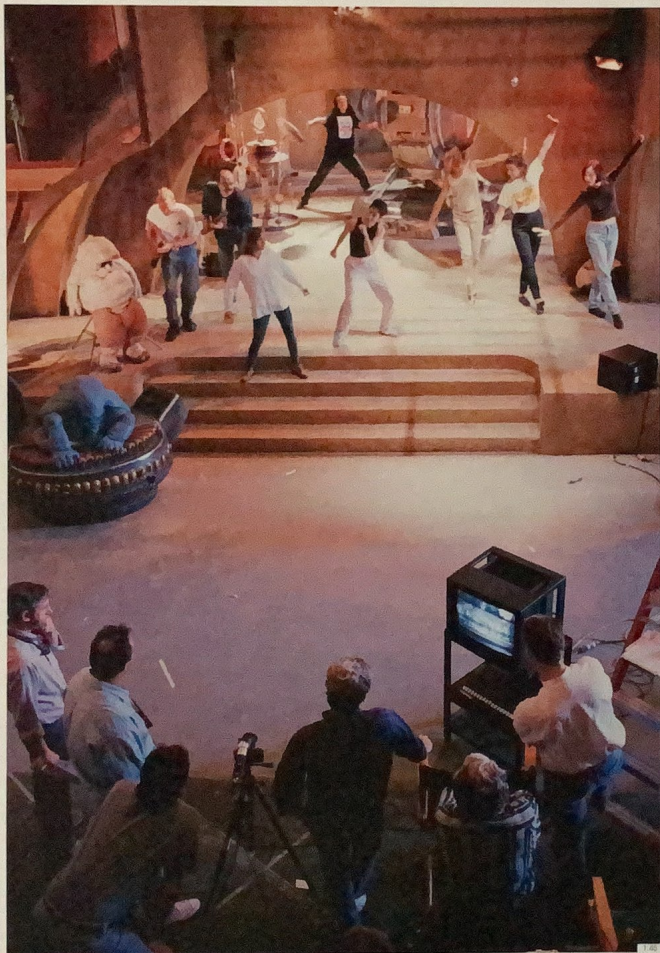
1.42-43 The Empire Strikes Back (1997) Storyboard by George Hall (dated February 11, 1996) and final frame of the Millennium Falcon arriving in Cloud City. George Lucas: "Similarly to the arrival in Mos Eisley, we added to the approach to Cloud City so you get to see more buildings and ships."

1.43-44 The Empire Strikes Back (1997) Storyboard by George Hall (dated February 10, 1996) and final frame of the added shot of Derek Vader on Cloud City about to get on the shuttle to his Super Star Destroyer.

1.42 The Empire Strikes Back (1997) George Lucas: "When [director Irvin] Kershner was on the Cloud City set he complained that he wanted to see more. The set was very claustrophobic and doesn't look out onto anything. When they are walking

through the city we added large windows so that you can see more of the city. It opens it out and makes it much larger."





TD1-3

From November 10, 1994, to April 4, 1995, a new set of storyboards were created, identifying 86 shots to be corrected, added, or modified. Each sequence of shots was given a code: TD/Tatooine Dunes, MA/Mos Eisley Arrival, JR/Jabba et cetera.

Tom Christopher There were three Tatooine Dune shots storyboarded. The original wipe went from the sandcrawler to shot TD3—we added TD1 and TD2 between them—and then we wiped to a daytime sandcrawler shot.

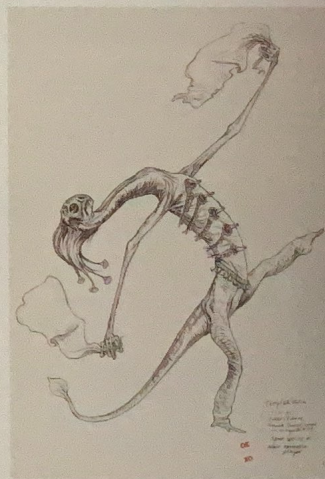
Tom Kennedy We scanned TD3 and removed the rubber dewback so that we could put CG puppets in. It was a wild camera move, so we had to build the 3-D space into which we could place the new CG puppets. We also rotoscoped the sky, the foreground troopers, and the horizon so that the new CG characters fit into the shot. Terry Whitlatch did studies of the dewbacks, and the skin texture. To save trial and error in the CG modeling stage, a modeler created a maquette and this was scanned to create a 3-D wireframe model. Carol Hayden used Viewpaint to paint the dewback skin, matching Terry Whitlatch's drawing.

A skeleton rig linked to the wireframe is created for the model, so that the animator can manipulate the model.

David Dozoretz / Animatics Artist The next step was to bring the 3-D elements to Electric Image, a rendering animation program, and in that we can set up virtual lights, cameras, and objects to duplicate what would happen on a real set.

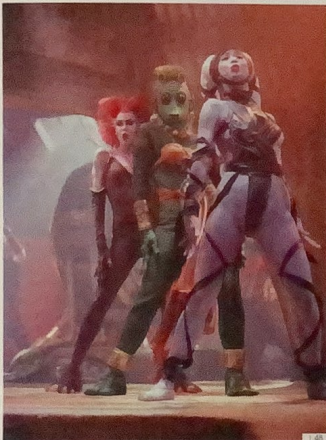
We make quick preview animations that will give the director and VFX supervisor a rough look at this shot, and we make changes until we've got something that will cut into the film. At that point the production team make this shot at film resolution.

The live-action plates for TD1 and TD2 were shot in Yuma, Arizona on August 10 and 11, 1996, by second unit director Joe Murray.



“There’s something very satisfying about having a thing not be right and always wanting to fix it, and then finally getting the chance to do it.”

George Lucas



Alex Seiden / VFX Supervisor The Yuma shoot was brutal for the US Marines walking around in stormtrooper costumes in the blistering 120 degree heat.

Tom Kennedy We used a Vistavision camera, which gave us a larger image to work with. To track that move, we placed tennis balls within the frame but outside of the image we were going to use. I measured distances, and did a survey of the ground plans and contours so that the CG space would match the physical space.

Once the negative was exposed and processed, we scan the frame range, with an additional six frames at either end for safety. Howard Gersh took the model, the animation, the Viewpoint, and placed the CG dewback into that environment.

Howard Gersh / Technical Director We do the animation in Softimage, and then import into Eyeshade to do the lighting. By looking at the stormtroopers' shadows we can see the direction and intensity of the sun, so I mimic that with my virtual key light.

Since the new footage for TD1 and TD2 and the CG elements of TD3 render so cleanly and perfectly, we have to digitally add film grain to match the original TD3 shot.

Our models are so data heavy that it's impossible to see it moving in real time at hires, so I'd take one key frame and light that, then send the whole frame range to be rendered overnight. It saves into Abacus, a hard disk digital recorder, and then we view the dailies in the morning.

We have I-NET dailies where our ILM crew talk to George, Rick McCallum, and Tom Christopher at the Ranch. We can interactively point of the picture and George makes the decisions.



Tom Christopher To show how the project evolved in George's mind, once we had the TD shots done, George changed the sandcrawler shot at the beginning, and later put a new sandcrawler at the end. This is very common on this project where suddenly the plan changed because something that we adjusted caused us to reinvestigate things around it.

The 24 shots that were on the ILM boards when I came in grew to 111 shots. George asked me to replace all the optical work in the movie. That started out as 28 wipes and another 15 to 20 opticals. That grew to 320 shots once we had found the original negs.



- 1.45 Return of the Jedi (1997) Lucas (bottom center) rehearses the choreography for the "Jedi Rocks" musical number on a reproduction of the original set. Mark Anderson: ILM Model Manager. "We got the original blueprints, then rebuilt about one-fourth of the set. We also built a lot of props, including a huge six-foot-diameter drum and all the different instruments."
- 1.46 Return of the Jedi (1997) Terry Whittatch's unused concept for a guitarist, dated January 19, 1996.
- 1.47 Return of the Jedi (1997) This concept for a female dancer by Terry Whittatch gets two "OK" stamps from George Lucas but did not make it into the movie.
- 1.48 Return of the Jedi (1997) The backup singers: Rysstall Sant (played by Mercedes Nogh), the Beldine Foresta Jendawanian (Celia Rushille-Burke), and the Turi Lek Lyn Me (Dolyn Chew).
- 1.49 Return of the Jedi (1997) The musical number by the Max Rebel Band is essentially a raucous duet between the Yuzzum Joh Yawna (left) and Sy Sautelles (center).
- 1.50 Return of the Jedi (1997) Bounty hunter Boba Fett (Don Bies, center) pays his compliments to Rysstall Sant while Lyn Me looks on.
- 1.51 Return of the Jedi (1997) George Lucas directed the wampa and Jedi Rocks scenes for the Special Editions.

"There are no more limits. We can create any setting, and populate them with large crowds in any costume, so we can make space movies and period epics. Movies can be epic again."

George Lucas



MA1-4

George Lucas The Mos Eisley sequence was one of the scenes that prompted this whole adventure of redoing the movie. The landspeeder was supposed to float but the Vaseline underneath it came out as an orange blob—we jokingly called it "the Force field." As well as correcting that, I wanted Mos Eisley to be more exotic and to be seen on a grander scale.

Four shots were planned for the Mos Eisley Arrival sequence. MA1 enhanced the original shot of the landspeeder entering the outskirts of town with wump rats scurrying in the foreground. MA2 is an added shot beginning with a thin droid arguing with a probe droid then...

George Lucas As the landspeeder enters, we pull back and see the whole city. We see more beasts of burden, more activity—it makes the place big instead of looking like a TV show.

MA3 is another new shot of the landspeeder traveling down a narrow street. MA4 is the existing shot of a busy street, which Mark Anthony Austin animated.

Mark Anthony Austin / CG Artist I was sitting in ILM dailies, early 1995. The I-NET transmission brings up MA4. I'd been instructed to add a ronto. Ronto added, shot done, just need to hear that magic word: "Approved."

I'd animated the ronto lumbering along like all the other approved ronto-in-background shots. In the foreground I'd animated a speeder bike slaloming his way through the crowd. I was waiting for that word.

George was rubbing his beard. "What is that ronto doing? Don't we have a guy leading that creature?"

Tom Kennedy was frozen a split second before he kicked back to life. "We already have two other shots where a man leading a ronto is matched to an existing extra in the plate."

"Well, we need this ronto to be carrying something. Can we give it a platform with something bulky on back?"

Frantic nodding. "Oh, I thought. 'Not a final today then.'"

"Yeah," George continued, "we need a guy riding on the platform. Do we have any Jawas?"

Somebody answered in the negative. "Well can we make some? We have a Jawa riding on back and wait... Wait!!! What if we have the speeder come in much more quickly and scare the ronto..."

"What?"

"Yeah the ronto acts like a horse. You know, when they rear up on their hind legs? It rears up and its forelegs kinda scabble at the air."

"No, no, no... What happened to my final?" I thought.

"It rears up so fast the Jawa falls off. No wait he falls and is still hanging from the reins, so it swings back and forth under this bucking ronto..."

I am in stunned silence wondering how we had gotten so far in seconds.

"What if we have two Jawas. One falls off the front and the other falls back and—splat!—lands on the dusty ground kicking up a cloud of dirt."

How quickly things can happen in this business...

Work on the sequence continued into 1995, with the negative for MA2 sent to Sunrise Films on June 12 via FedEx.

PC1

George Lucas Episodes IV, V, and VI are nice movies, where the good guys win. For the Han/Greedo scene in the cantina, the idea was originally that Greedo fires first, then Han shoots him. The tradition of gun fighting is the good guy always shoots second. When I edited the scene in 1977 you couldn't tell who did what.

Paul Duncan To me it looked as though Han just shoots Greedo.

George Lucas I never designed Han to be a ruthless killer. All the good guys shoot people in self-defense. So I decided we needed to insert a shot where Greedo fires first, so Han can shoot him.

Paul Duncan Han's reaction time to Greedo's shot is fantastic—less than a quarter of a second according to storyboard PC1. But there was a tremendous backlash about that—people were upset you changed it.

George Lucas Those people wanted Han Solo to be a murderer. The whole point to the movie is to establish certain moral parameters. Everything in a movie teaches something. If you have kids, you know how they are—they wake up, look around, and copy how other people act.

Everything we are is defined by the way we conduct ourselves, the way we talk, the way we think about other people. So if you have a lot of self-centered, selfish people who ignore the rules and do whatever they want for their own reasons, you have a society that does that too.

JB1-4B

On April 12, 1976, on the Docking Bay 94 set at Elstree Studios, Harrison Ford shot his first scene as Han Solo. Jabba the Hutt (Declan Mulholland) wants to collect a debt from Han.

Richard Chew / Editor George had the idea of animating Jabba and obliterating the actor.

George Lucas I thought Jabba would be a furry character like Chewbacca. ILM said, "We don't have the manpower or the money to do it." So, I said, "Let's take it out. It's not that important."

Jabba was a slug-like creature in Return of the Jedi.

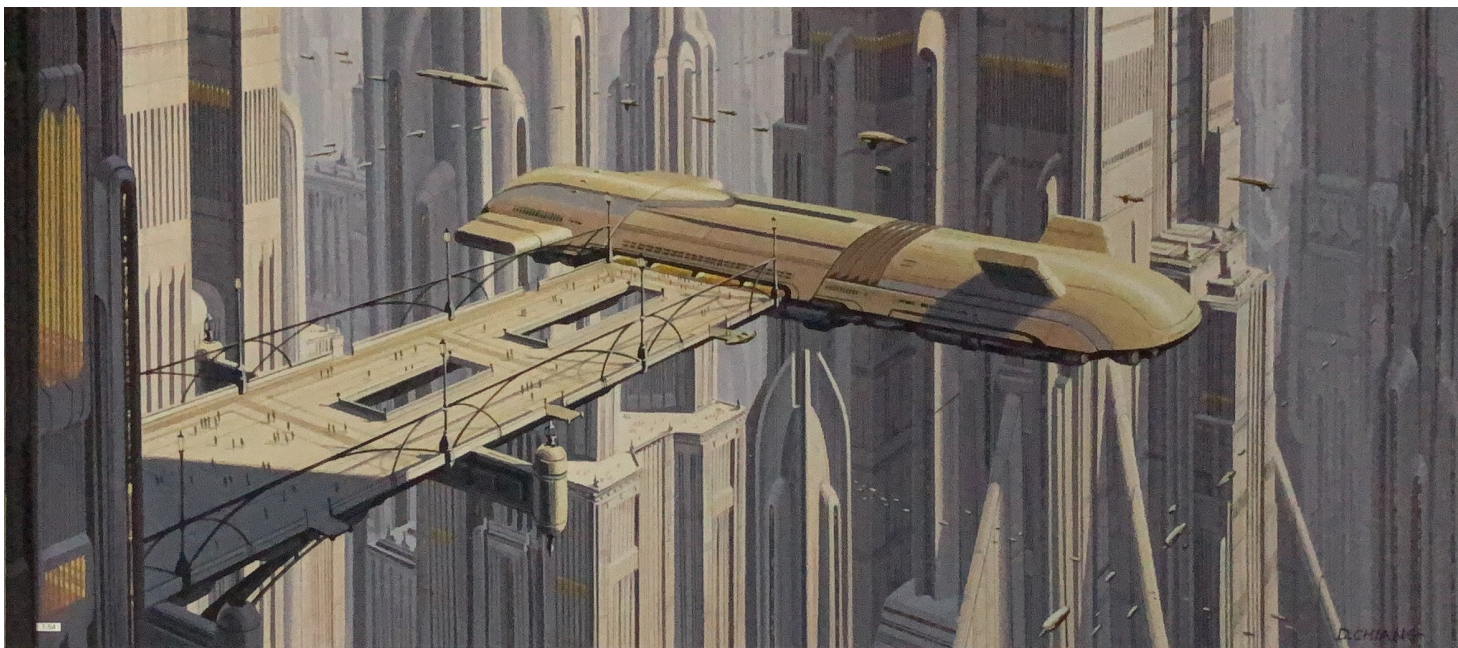
George Lucas Once I finished Jedi, I wanted the Han/Jabba scene to be put back in A New Hope because it connects the films.

The scene comprises of five VFX shots, labeled JB1-4B, and three non-VFX shots.

Joe Letteri / CG Supervisor Ben Burtt did the voice track first. After George approved it, Steve Williams hand-animated all of the lip sync.

I used the original Jabba's textures for reference, the CG model was constructed differently, so we had a Viewpoint artist paint it by hand. I also used some new eye techniques I designed for Casper (1995) to give Jabba eyes like a cat's. That varied





from the original, but I wanted something a little more organic than those glass eyes. George said, "Go for it!" He liked the eyes.

George Lucas The new Jabba is so much better than the old one I had to work with. That was just a big old rubber thing. But now I've got one that's very articulate. Its speech is fantastic—the lip sync is great. The tongue is great, the eye movement—everything! And he walks, too.

Rick McCallum But there was one problem. Han Solo walks around Jabba.

Steve Williams / Animator It's impossible for him to walk behind Jabba because of his tail. So George had the idea, "Why don't you have him step on his tail?"

Joe Letteri Steve didn't just track Ford up in the frame behind Jabba. He had to do a little bit of animation, because a step up involves a lot of body movement, so he cut up all of the pieces and put them back together with the right attitude.

178/178A

George Lucas In 1977, we couldn't make the ships start any bigger and get any smaller because we had only a three-foot track on

the Dykstraflex camera. But now, doing everything on a computer, we can make these shots be whatever we want them to be.

In many space battle shots computer-generated spaceships replaced the models. The original storyboard for shot 178 shows the Rebel armada in space flying towards the camera with Yavin and the fourth moon in the background. The next shot, 178A, starts with the Death Star in the distance and the armada flying past the camera towards the Death Star. In the 1977 film the shots are reversed, but John Knoll reinstated the original sequence and made the shots continuous.

Rick McCallum You can even see the heads of pilots moving inside the X-wings.

John Knoll The dogfight shots from the original film are very static. The TIE fighter is directly behind the X-wing, and they are slowly rolling in sync, which doesn't capture what's happening in the dialogue when Luke exclaims, "I can't shake him!" So I replaced that series of shots with more swerving and maneuvering and tight turns.

The new shots make it clear that the TIE fighter doesn't have a good shot yet. That's probably the best case of how the redo

helps to tell the story in a better manner. Now it's a much more exciting moment in the film.

SDDS, DTS, Dolby SR-D

Rick McCallum Lucasfilm is based on the philosophy that sound is 50 percent of the experience.

Ben Burtt There were three different US sound mixes of Star Wars. One was the Dolby Stereo optical—it was the first film in wide release to go out in Dolby Stereo—one was 70 mm magnetic six-track, and the last was conventional optical monoaural. Each mix is a separate performance, so each is different. George would sit in on the mixes and sometimes we'd change something, "I don't like that sound. Let's put in something else," or "Let's change that stormtrooper's line." None of these were differences that changed the story.

Tom Christopher For the Special Edition we have been able to use the original soundtrack recordings. That allows a much clearer reproduction of the entire audio of the films.

Ben Burtt The restoration process involved making all of the changes that George originally wanted but we were never

1.52 Return of the Jedi (1997) John Knoll helps set up and light the models to be used in the shot showing the celebrations on Coruscant.

1.53 Return of the Jedi (1997) The final shot pans to the left revealing thousands of buildings covering the surface of the planet, people cheering, and ends with fireworks in the distance.

1.54 Return of the Jedi (1997) While Doug Chiang was sketching concepts of Coruscant for Star Wars: Episode I, George Lucas decided to include the planet as part of the celebrations at the end of the Return of the Jedi Special Edition. Doug Chiang: "It allowed us to use the celebration as a test bed for how three shots would play out, how they would look on the big screen. As a result, we used the end of the last movie as sort of a preview for the first movie." This concept painting was completed on February 29, 1996, after "6.25" days of work.

able to do. It was mostly making explosions stronger or dialogue clearer.

We took our original sound elements, digitized them, and put them into Pro Tools to do the edit. We also had to redo the film's surround track. The advantage with digital is that you have five discrete channels of sound. The music sounds better. The ambience is more spatial. You can also reproduce low frequencies more effectively—with a subwoofer you can get a rumble that can vibrate your chair. We have added this for spaceship flybys, explosions, and when Vader uses the Force.

"Digital technology frees you up, especially in a fantasy film, in ways that are overwhelming. You can think of things and write things, but it's very hard to make that literal and real. Digital technology is going to allow science fiction and fantasy films to flourish as they never have before."

George Lucas

All of the new prints are 35 mm anamorphic, compatible with all these digital formats: SDGs, DTS, and Dolby SR-D. In the studio, in 1977, it sounded great, but chances were 1-in-50 that it would sound that good in a theater at that time. It was exciting for us to rerelease the films to theaters, as we knew we could have a much greater chance of the sound playing a larger role in the presentation of the film.

George Lucas Once I had started redoing the first film, it was such a good experience, I said we should go back and finish the other two as well.

The Empire Strikes Back Special Edition (1997)

George Lucas We built a snow monster for *The Empire Strikes Back*, but it didn't look very good, so we cut it out. At the last

minute I had Phil Tippett build a tiny puppet of a head, which we were able to use in two shots, to give an impression of a snow monster. For the sequence in the snow cave you can hear it, but you can't see it. Some people say that it is more artistic to not show it, but I wanted to see the monster. I felt it would add more tension to the scene.

Harold Weed/Chief Creature Maker I headed the creature team at ILM, building proof of concept studies and attending production meetings. Having worked with Dennis Muren as a creature performer on *Ghostbusters II* (1989) we decided that I could perform in the suit.

We were shooting the wampa on our ILM sound stages when George asked if I could open the mouth wider. My arm had just been chopped off, so George wanted to see an extreme scream. The mask's mouth was opening as wide as my jaw could manage, so I moved my free hand up inside the suit and into the mask's mouth. On "action" I pulled down the jaw as wide as I could,

which broke dozens of little elastic bands inside the mask. That got the result George was looking for and he called a wrap. The wampa mask was broken, but we got the shot.

Return of the Jedi Special Edition (1997)

George Lucas In the original *Jedi*, director Richard Marquand, the puppet team at ILM, and I wanted to do a big musical number, but we could get barely 15 or 20 seconds out of a puppet.

Rick McCallum The Sy Snootles puppet couldn't open her mouth or lip sync properly. Her eyes didn't move.

A replacement sequence was made for the Special Edition. Live-action footage was shot on the ILM stage with performers and puppets combined with a CG version of Sy.

Tom Hutchinson/Computer Graphics Supervisor We're using ILM's Caricature software extensively for Sy's lip animation, as well as all her facial expressions, down to the movements of her eye stalks and eyelids.

The Special Edition of *A New Hope* was released on January 31, 1997, with 111 remastered shots and 482 optical shots by Pacific Title. *The Empire Strikes Back* followed on February 21, with a total of 157 remastered shots. Finally, *Return of the Jedi* was released on March 14, 1997, with 75 remastered shots.

John Knoll If you look at the things George had us working on, they were experiments involving questions such as "What's it going to be like doing a shot with this many extras in it?" "What does a typical space battle shot cost?" and "What does it cost to take a live-action scene and put two big CG creatures in the background?" They've been very carefully tracking the production costs of doing that work, so they can accurately budget the next series of Star Wars pictures.

George Lucas One of the reasons I'm going on to do the new Star Wars films is that the technology has gotten to the point where there is a thrill again.

I've loved movies and making films and telling stories all my life, but I've struggled with special effects and all of the photographic problems. To suddenly have those things solved, and be able to change things with a computer, is like being set free after having been tied down for 20 years.

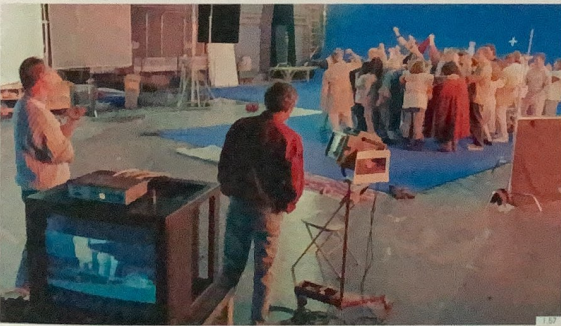


1.55 *Return of the Jedi* (1997): The "Ewok Celebration" song at the end of the 1982 release, commonly known as "Yub Yub," was replaced with new music by John Williams called "Victory Celebration." Terry F. Whitlatch provided designs for new shots of the Ewoks dancing, including this one dated March 12, 1996.

1.56 *Return of the Jedi* (1997): An added shot of celebrations at Mos Eisley spaceport on Tatooine, with a T-16 skyhopper flying overhead.

1.57 *Return of the Jedi* (1997): In present crowd scenes in the movie, a small group is filmed, placed in the scene, and the process is repeated. The display at left shows that the crowd being filmed will be placed in the right of the plaza on Cloud City.

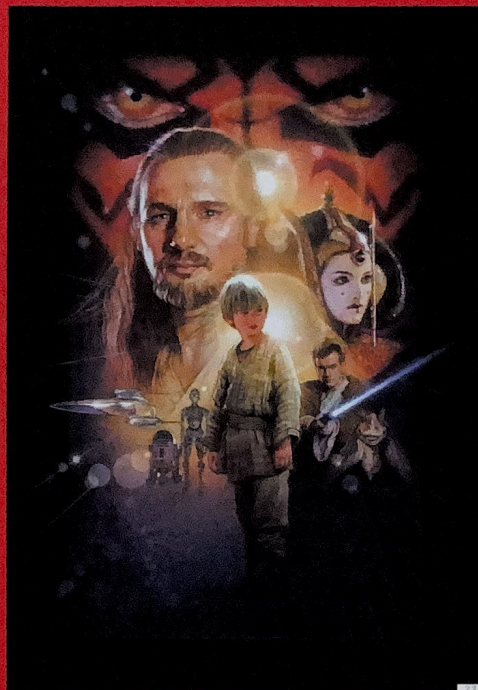
1.58 *Return of the Jedi* (1997): The final frame of victory celebrations on Cloud City.





The Phantom Menace

Episode I: The Phantom Menace (1999)



Synopsis

Stranded on the desert planet Tatooine after rescuing young Queen Amidala from the impending invasion of Naboo, Jedi apprentice Obi-Wan Kenobi and his Jedi Master Qui-Gon Jinn discover nine-year-old Anakin Skywalker, a young slave unusually strong in the Force. Anakin wins a thrilling podrace and with it his freedom as he leaves his home to be trained as a Jedi. The heroes return to Naboo where Anakin and the queen face massive invasion forces while the two Jedi contend with a deadly foe named Darth Maul. Only then do they realize the invader is merely the first step in a sinister scheme by the re-emergent forces of darkness known as the Sith.

RELEASE DATE May 16, 1999 (US)

RUNNING TIME 136 minutes

Cast

QUI-GON JINN UAM NEESON
OBI-WAN KENOBI EWAN MCGREGOR
QUEEN AMIDALA / PADMÉ NATALE PORTMAN
ANAKIN SKYWALKER JAKE LLOYD
SENATOR PALPATINE IAN MCDIARMID
SHMI SKYWALKER PERNILLA AUGUST
SIO BIBBLE OLIVER FORD DAVES
CAPTAIN PANAKA HUGH QUARSHIE
JAR JAR BINKS AHMED BEST
O-3PO (VOICE) ANTHONY DANIELS
R2-D2 KENNY BAKER
YODA (VOICE) FRANK OZ
CHANCELLOR VALORUM TERENCE STAMP
BOSS HASS (VOICE) BRIAN BLESSED
WATTO (VOICE) ANDY SECONDE

DARTH MAUL (V.O.) PINK
SEBILBA (VOICE) UNIS MACLEOD
WALD / PODRACE SPECTATOR / MOS ESPA CITIZEN
WARWICK DAVIS

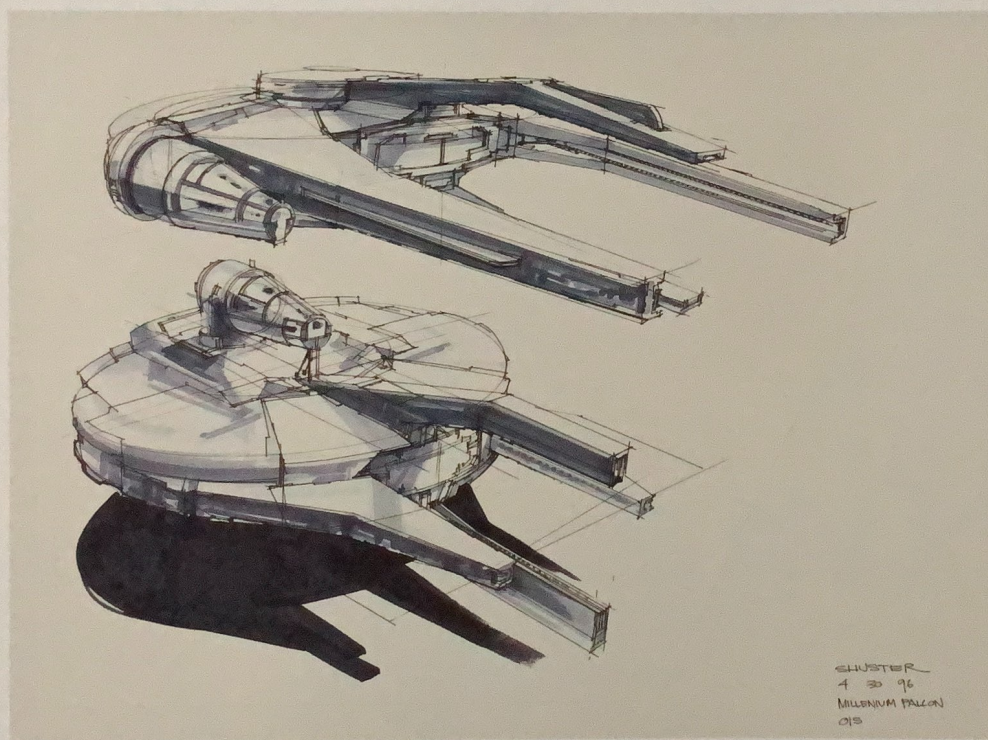
Crew

DIRECTOR GEORGE LUCAS
PRODUCER RICK MCCALLUM
SCREENPLAY GEORGE LUCAS
EXECUTIVE PRODUCER GEORGE LUCAS
PRODUCTION DESIGNER GAVIN BOGDAN
DIRECTOR OF PHOTOGRAPHY DAVID LAFERRE
FILM EDITORS PAUL MARTIN SMITH, BEN BURTT
COSTUME DESIGNER IRISHA BODAN
DESIGN DIRECTOR GORD DUBANS

VISUAL EFFECTS SUPERVISORS CHANNELL
DORING, JASON, SCOTT, SCARLES
ANIMATION DIRECTOR ROB COLEMAN
SOUND DESIGN BEN BURTT
MUSIC JOHN WILLIAMS

A Symbiont Circle

By Paul Duncan and Colin Odell & Michelle Le Blanc



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MILLENNIUM FALCON
O/S

George Lucas After I finished *Star Wars*, *The Empire Strikes Back*, and *Return of the Jedi* in 1983, financially and physically the prequels couldn't be done. I was recovering from a divorce, which was pretty consequential on the financial side of things, and I didn't have the technology. Yoda couldn't move more than six feet, and I couldn't show his legs, so I couldn't show him in a wide shot and I couldn't show him running, jumping, or walking any distance. Yoda couldn't fight. We could have tried to animate him with stop-motion but I couldn't really get him to do what I wanted him to do. So I said, "What the heck, I'll just spend my time developing the technology, and produce films."

Also, I was so tired and burned out that I needed to go and do other things for a while to replenish my creative juices. I said I would do the new *Star Wars* when my life was able to accommodate it.

I learned a lot of lessons in those years! One is that the only true route to happiness is through caring about other people. If all you care about is yourself and about your things and your stuff, you will be unhappy the rest of your life no matter how much you accumulate.

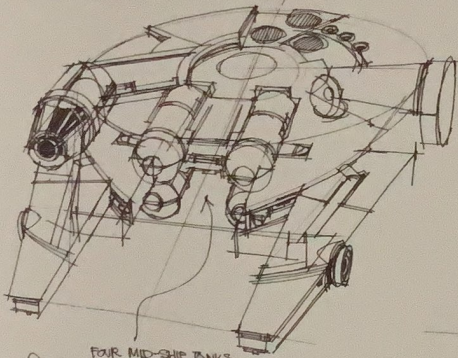
For 15 years I dealt with my family. The idea of taking five or six years to do the intense work that it would take to make the prequels is daunting, and it's also something I haven't really had the mindset to get into. I'm going back and doing them now because I'm not getting any younger. We've also advanced the technology to the point that we can bring characters and environments to life on the screen, and I can tell stories that I couldn't tell before, that I've wanted to tell but I wouldn't dare attempt, and do it in a cost-effective way. I think I can push the envelope to tell stories that are fanciful in nature and fantastical in scope.

21 Qui-Gon Jinn (Liam Neeson) and Obi-Wan Kenobi (Ewan McGregor) battle Sith Lord Darth Maul (Ray Park) at the climax of the film.

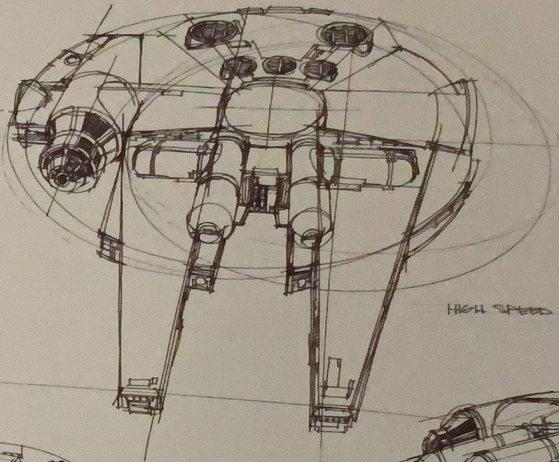
22 Drew Struzan's poster for *The Phantom Menace* was released on March 11, 1999.

23-4 Jay Shuster designs dated April 16 and 20, 1996. Doug Chiang: "George wanted a new *Republic Cruiser*, our version of the *Blockade Runner*, so Jay Shuster and I worked on blending the *Vahoon* aesthetics with the *Blockade Runner* to try to come up with a new *Republic Cruiser*. In the early days, it was really fun because we were trying to establish the historical design timeline and it took a while to find that, so you'll see a lot of weird ideas we were just throwing out there to see if any of them were even in the ballpark for what George wanted."

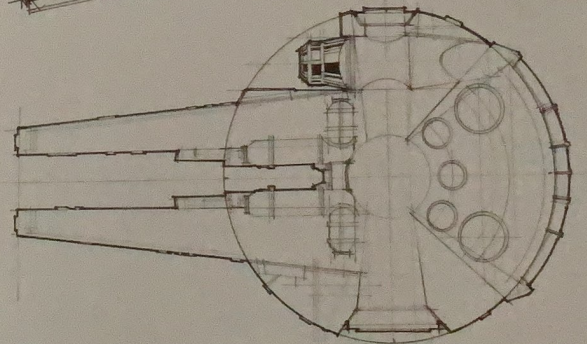
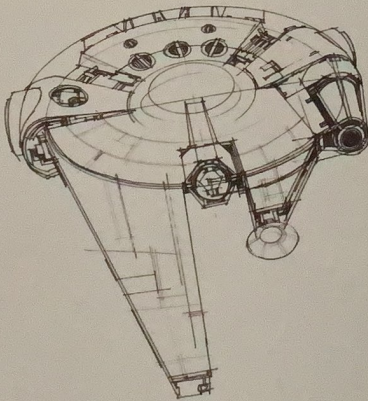
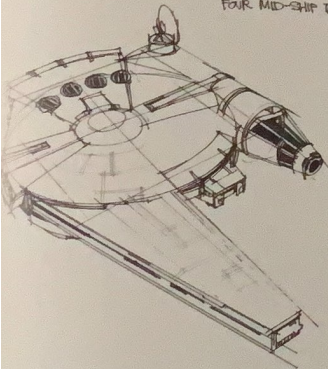
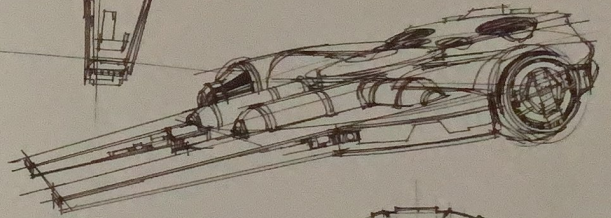
MILLENNIUM FUEL TANKER



FOUR MID-SHIP TANKS

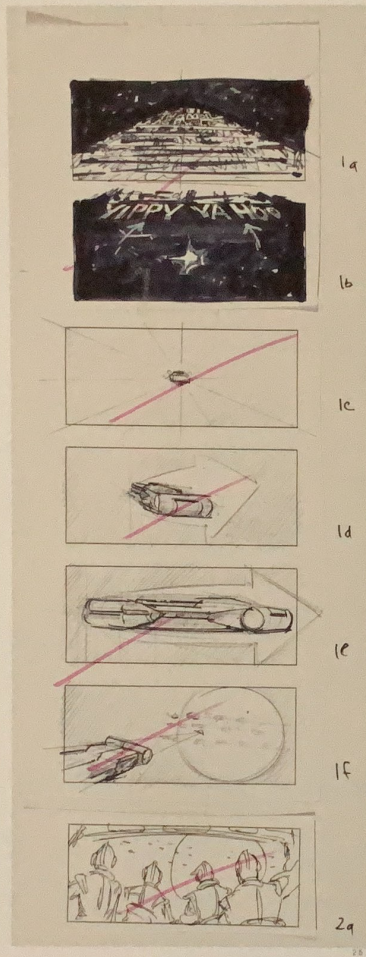


HIGH SPEED HAULER

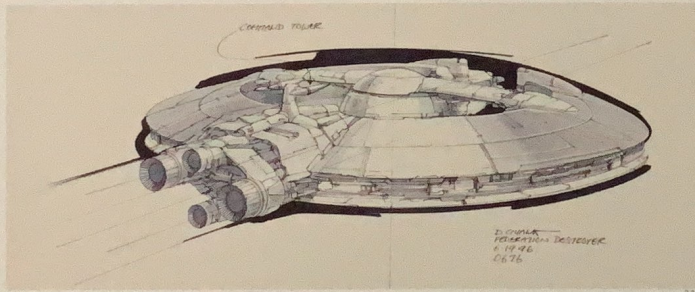
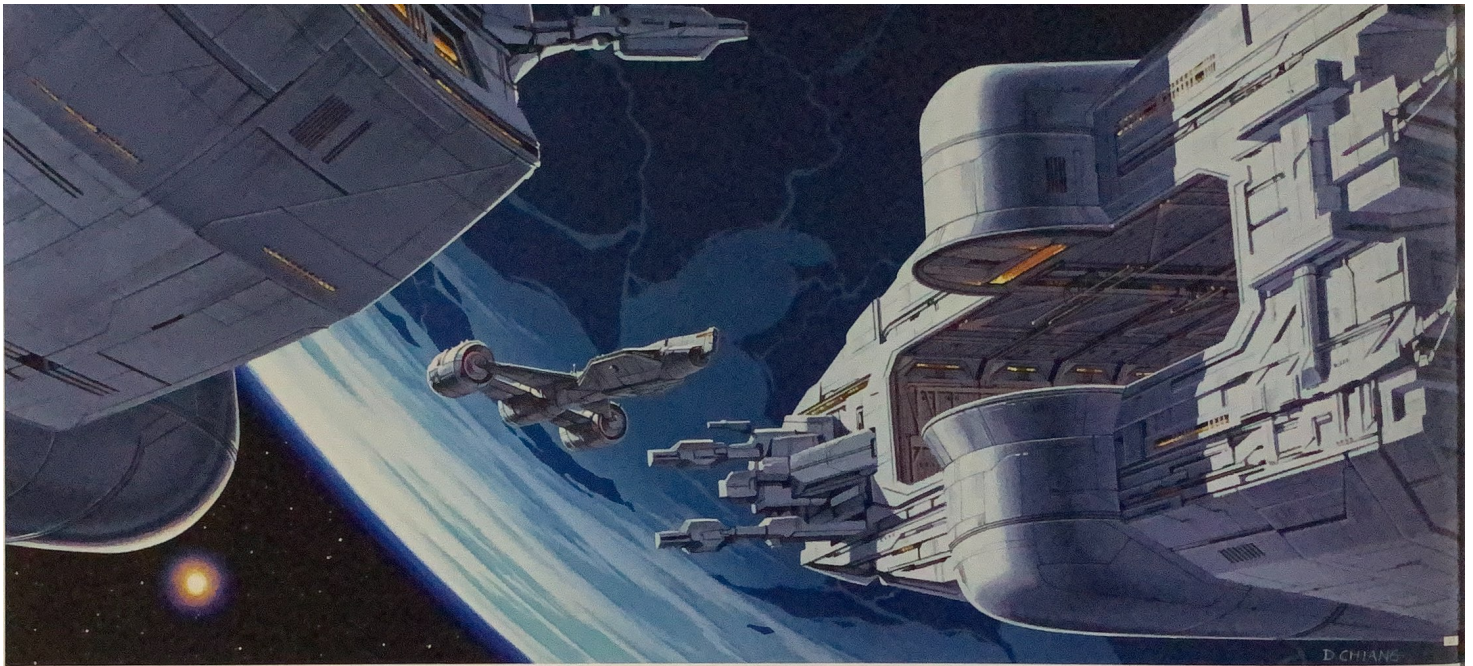


MILLENNIUM FALCON II

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- 2.5 Storyboard showing the iconic Star Wars introductory crawl, followed by Qui-Gon and Obi-Wan's Republic Cruiser emerging from hyperspace. Storyboards were often storyboarded by artists like John McVie, Ed Vachon, and Brenton Jones while in conference with George Lucas, then arranged in sequence, as shown, before being rendered in more detail by one of the artists. Note that the Republic Cruiser is an early design, similar to the Blockade Runner in Episode I.
- 2.6 Doug Chiang's concept art for the Republic Cruiser approaching the Trade Federation's ship was completed on May 8, 1996 (3.3 days' work). The Trade Federation ship is a flying saucer design with the hangar entrance located at the bottom of the ship. Doug Chiang: "Star Wars design is about simple shape language: triangles, squares, and circles. For the Trade Federation ship George said, 'Let's try a flying saucer.' That clicked with me because I love '50s science fiction films like Ray Harryhausen's *Larva*. The *Living Saucers* (1956)."
- 2.7 Chiang's redesigned concept art, completed on November 6, 1996 (3.5 days), shows detail of the Trade Federation ship's hangar bay entrance as the Republic Cruiser approaches.
- 2.8 The Trade Federation ship, drawn by Doug Chiang on June 19, 1996. Chiang: "George liked the idea of the

saucer, but when he saw that you couldn't tell which way it was going, we put an engine in the back. Then George said, 'Let's turn it into a donut, and we need to cut away the front.' That created this mandible look. I did exactly what he asked for, then tried to make sense of it—the mandibles were like cargo claws that pulled in cargo ships into the big hangar. Then he threw me for a loop. He said, 'Let's put a little Death Star ball in the center.' That was like, 'Oh wow, really?' It makes sense eventually, when that ball detaches to land on Geonosis, and it is the Geonosis who develop the Death Star. There are some really nice threads from early on that's all being tracked. Nothing is ever arbitrary with George. There's always a reason for it."

2.9 Final frame of the Trade Federation battleship as the Republic Cruiser arrives. The sphere in the center of the ship prefigures the Death Star. Doug Chiang: "Since we were designing spaceships earlier in the timeline, I wanted to plant visual influences that you can then see and connect the evolution of the design into the original trilogy."

2.10 H.M. model maker Grant Imahara inspects the engines on the scale model of the Trade Federation ship, which has been fitted with lights.

"When I was writing Star Wars I'd sit down, lock myself up, and I wouldn't come out for months until I was finished. This takes a certain kind of stamina, because the process of writing is not easy and takes a great deal of concentration and almost, I guess, the essence of meditation. You get into a world, stay there for a while, then move around and see the things that are happening there."

George Lucas

The Tragedy of Darth Vader

George Lucas For *Star Wars: The Empire Strikes Back*, and *Return of the Jedi*, I had to know where the Emperor and Darth Vader came from to make the story of Luke Skywalker coherent.

In 1981, during a five-day story conference for *Return of the Jedi*, Lucas gave details on how Anakin Skywalker, Luke's father, became Darth Vader.

George Lucas/Story Conference/July 13-17, 1981

Anakin Skywalker began hanging out with the Emperor, who at that point nobody knew was that bad, because he was an elected official. He was a politician Richard M. Nixon was his name. He subverted the senate and finally took over and he was really evil. But he pretended to be a really nice guy. Luke's father gets subverted by the Emperor. He gets a little weird at home and his wife begins to figure out that things are going wrong and she confides in Ben, who is his mentor.

On his missions through the galaxies, Anakin has been going off doing his Jedi thing and a lot of Jedi have been getting killed—and it's because they turn their back on him and he cuts them down. The President is turning into an Emperor and Luke's mother suspects that something has happened to her husband. She is pregnant. Anakin gets worse and worse, and finally Ben

has to fight him and he throws him down into a volcano and Vader is all beat up.

When he falls into the pit there is hardly anything left of him by the time the Emperor's troops fish him out of the drink. Then when Ben finds out that Vader has been fished out and is in the hands of the Empire, he is worried. He goes back to Vader's wife and explains that Anakin is the bad guy, the one killing all the Jedi.

Mrs. Skywalker has had the kids, the twins, two little babies who are six months old or so. The Skywalker line is very strong with the Force, so Ben says, "I think we should protect the kids, because they may be able to help us right the wrong that your husband has created in the universe." Ben takes one and gives him to a couple out there on Tatooine and he gets his little hideout in the hills and he watches him grow. Ben can't raise Luke himself, because he's a wanted man. Leia and Luke's mother go to Alderaan and are taken in by the king there, who is a friend of Ben's. She dies shortly thereafter and Leia is brought up by her foster parents. She knows that her real mother died.

I think you can make Ben take the blame for Vader. "I should have given him more training. I should have sent him to Yoda, but I thought I could do it myself. It was my own pride in thinking that I could be as good a teacher as Yoda. I wish that I could stop the pestilence that I've unleashed on the galaxy." His burden is that he feels responsible for everything that Vader has done.



Paul Duncan If it is clear that you had precise ideas from the very beginning.

George Lucas There was no room for me to put the backstory in those films in an organic way. Also, if I had started talking about the backstory, the Whills, and the midi-chlorians, and all that kind of stuff in *Star Wars*, people would have gone, "Oh my God!" and backed off.

It wasn't until *Jedi* came out that I realized I'd lost the tragedy of Darth Vader. In *Star Wars*, it's set up as, "What is that guy? Is he a monster? Is it a robot?" They didn't know what he was. Over the three films his story dissipated. He was the chosen one of the prophecy, yet the irony was lost that it was the son bringing humanity back to the father. It wasn't clear.

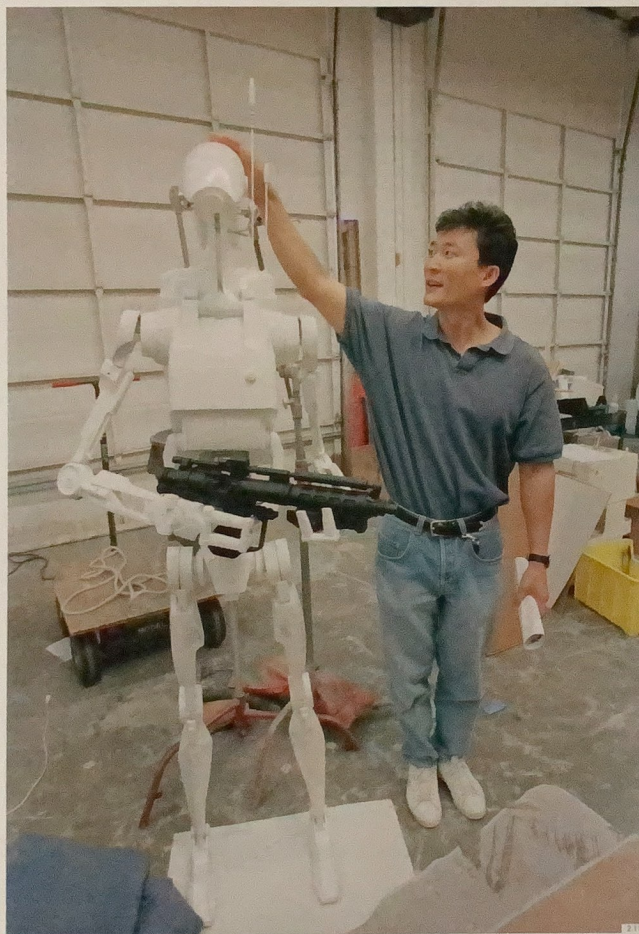
I felt the story of Anakin Skywalker had enough pathos and enough of a story to enrich the prequels: how Anakin became a Jedi; how he learned to use the Force; the dark side of the Force; the light side of the Force; and midi-chlorians; this is where Obi-Wan came from; this is what their relationship was; how Anakin turned into Darth Vader.

When I told Fox the next film is about how Darth Vader got to be Darth Vader they got all excited. I told them, "In the first movies, he's 10 years old." Fox, and also people at Lucasfilm, said, "You're going to destroy the franchise; you're going to destroy everything! You can't do it, this is terrible!" Everybody was upset, and I thought, "This is why I own the films, and I own the company, because if I didn't, this film would never get made." If I went to a studio with this story, it would never have existed.

I know everybody wants to see Darth Vader in his black suit with his lightsaber, but the whole point of it is: How does this nice little kind kid, who has good intentions, is just like us, go wrong and become Darth Vader? And the second part of the story is: How does a democracy become a dictatorship?

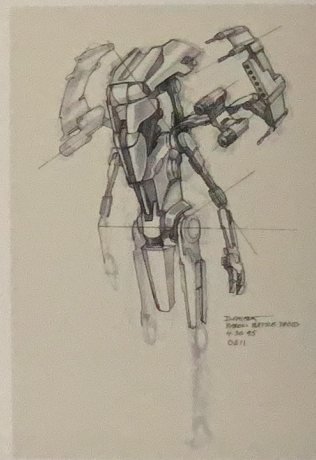
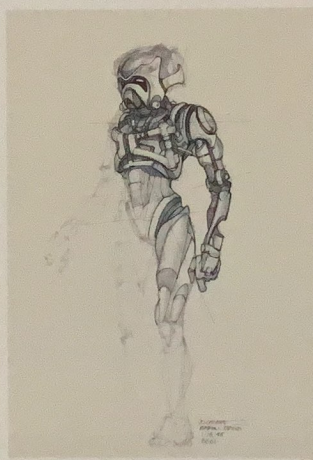
I told people at Lucasfilm that they're going to have to face the reality that I'm making a movie that nobody wants to see, but I want to tell that story. I'm more interested in telling the story than I am in just doing a franchise where you tell the same story over and over again.



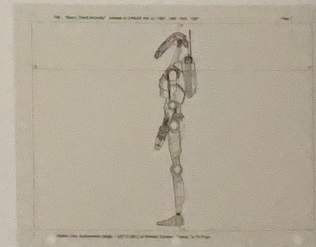


"My idea for the battle droids was that they were walking skeletons that were super deadly, like in Ray Harryhausen's Jason and the Argonauts (1963)."

Doug Chiang / Design Director



- 2-11 Doug Chiang reviews the full-size battle droid model. Chiang: "I wanted them to be tall because I wanted them to be menacing. They were white, like the stormtroopers, but during shooting, George said, 'Let's make them tan.' Models like this were used during filming to give outlines for the actors."
- 2-12 The first drawing for the film by Chiang, dated January 15, 1995, is of a baron droid. The droids belonged to the trade barons, or rubber barons, later named Neimoidians.
- 2-13 Once the basic shape of the droid was established Chiang experimented with transforming it for battle. Here the backpack becomes a weapons array.
- 2-14 The final design for the battle droid constructed as a 3-D wire-frame model by David Bossett.
- 2-15 Chiang's concept for a Sith spaceship (July 31, 1996) became the basis for this Trade Federation starfighter (October 7, 1997), which is shown in attack, flight, and landing configurations.
- 2-16 Chiang's starfighter (October 7, 1997). Chiang: "George wanted a droid precursor to the TIE fighters, which is why you have the twin wings. At a certain point, I found this great reference of pterodactyls and wondered, 'How about if the wings unfolded, and they can actually land and walk?' and they became even more creaturelike."



Paul Duncan So you made the movie for yourself.

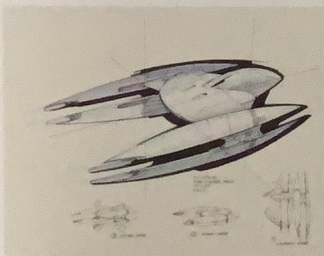
George Lucas I make all my movies for myself. People will say, "When you release it, it belongs to the public." No, it's mine. I'm leasing it to you, \$10 at a time. It still belongs to me.

November 1, 1994

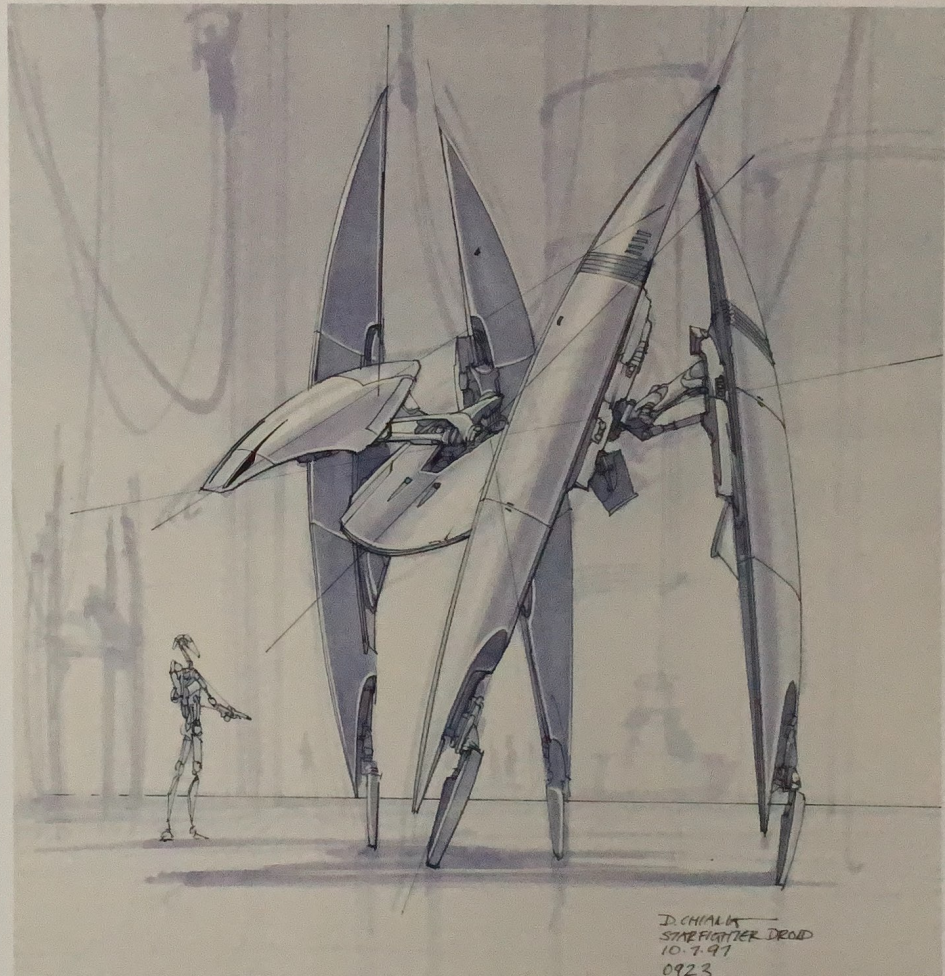
George Lucas Today is my first day of writing the new *Star Wars* series. It's a beautiful sunny day in slightly drought-ridden California. Took my kids to school this morning. My oldest daughter was sick all night, until 5:30 a.m. I got no sleep whatsoever so it will be a very interesting first day of trying to stay awake more than anything else. That will be the biggest challenge. I am excited about doing this.

I've always intended to do these movies and finish them just to satisfy my own anal personality—I want to finish everything that I start.

I'm working three days a week on *Star Wars* and then I have two days a week to finish editing three *Young Indiana Jones* TV movies, shepherd scripts for *Red Tails* and the new *Indiana Jones* film, work on an educational film that I've developed to show what education is going to look like in the future, and do corporate business. I have three companies—Lucasfilm, LucasArts, and Lucas Digital (which is Industrial Light & Magic and Skywalker Sound). Lucasfilm finances these movies so there's business involved in this process that a lot of filmmakers don't have to deal with, but it allows me the creative freedom to do whatever I want without a studio overseeing the whole process, which I like a lot.



2/15



2/16



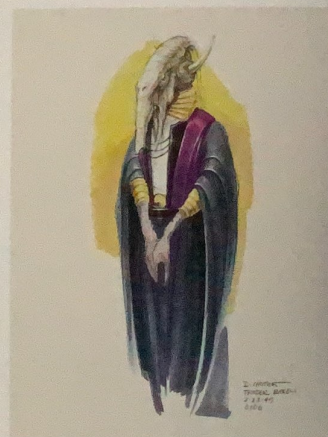
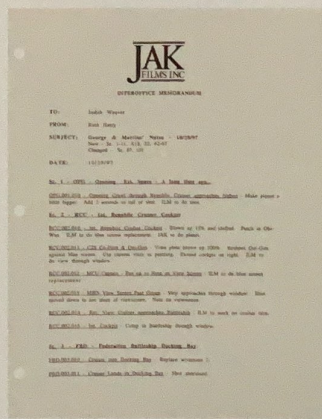
"George would tell me, 'Give me something fresh yet bold that the audience can understand in the five or ten seconds that it's going to be on the screen.'"

Doug Chiang

Besides that, it's an empty life. (Laughs)
I write with a pencil in a ratty, beat up, old three-ring binder. I have written everything I have ever done in the same binder. I started when I was in college. I have a bunch of them now but I still have the one I wrote *THX* in. And I wrote *Graffiti* in it. I wrote *Star Wars* in it.

The original notes and outline for the new trilogy are something like 15 pages. I have to put them into a scene form and a script form. There are a few set pieces and sequences laid out but there's a lot to do in terms of developing the characters and filling in the scenes. There is drama inherent in it because there is a lot of betrayal, but the subtleties and intricate weaving of the story haven't been done at all.

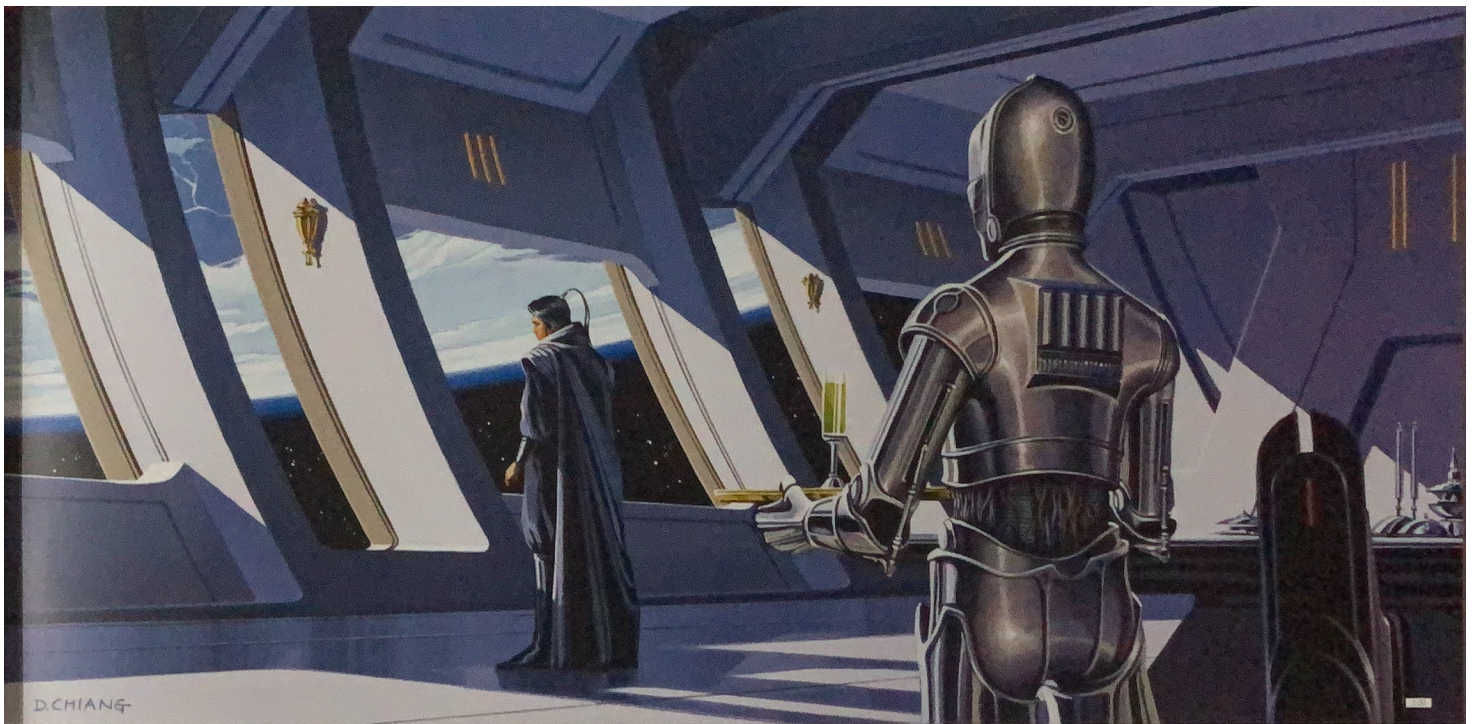
On writing days I come to my home office and I read for about three or four hours. I study mythology, folk tales, religion as well as pivotal events in history, and sociological/anthropological studies about the way societies work, what they believe in, and how those things are put into practice.



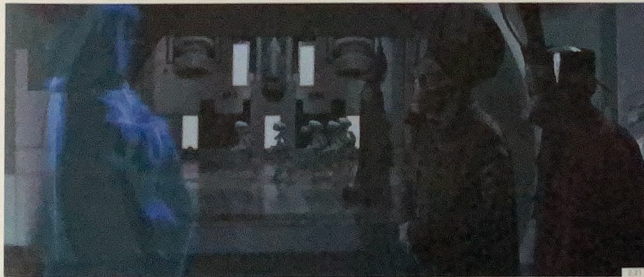
2.17 *Iain McCaig's concept (December 1, 1995) could be applied to announce characters, whether savants or truly harmful.*

218 I was a detailed editing notes for the opening sequence. The procedure of production of nonlinear digital editing, where the whole movie can be developed and amended at the same time. He specifies changes in the length of shots, the percentage changes in size of characters and objects within the frame, set extensions, and changes of movements. He also notes which shots are to be re-shot and allocates 12% to either H.M. in San Rafael and the Shoshone Band in the "Huron" scene to make a shot into the scene. These techniques had been pioneered in The Young Indiana Jones Chronicles.

2.19 Chiang's early concept for a trade baron (February 23, 1995): Doug Chiang: "I wanted to put in a little underlying theme that the Neimoidians actually made the battle droids in their image, so I gave the Neimoidians a very long elongated head. It was like the organic version of the droids. George was worried he was going to break ILM if he made more digital characters, so he asked Nick Dudman to redesign them to be character actors in masks."



D. CHIANG

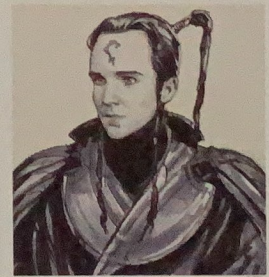


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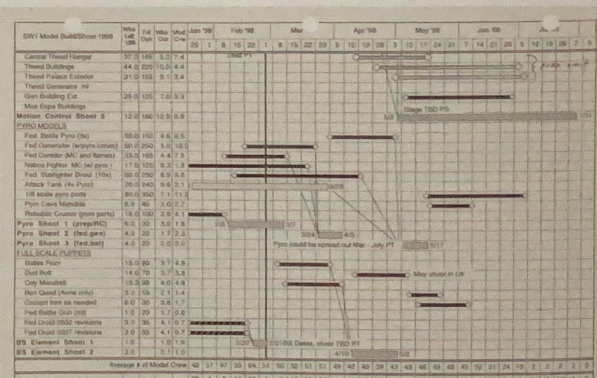
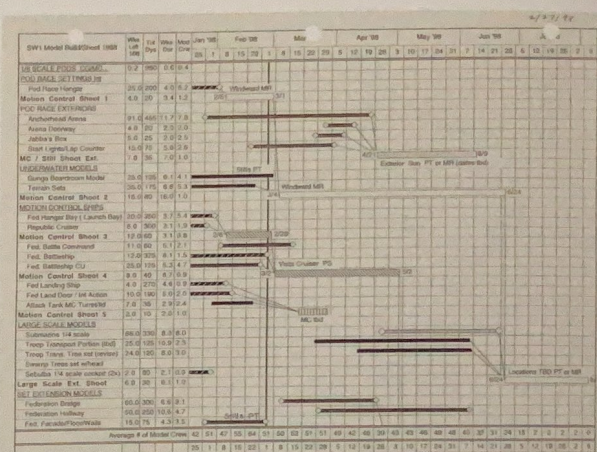
0.20 Obi-Wan Kenobi is offered refreshments by a protocol droid while awaiting an audience with Nute Gunray. Concept art by Doug Chiang (April 16, 1998, 3 days). Doug Chiang: "Initially, Obi-Wan was the master out on this mission alone, and then he takes on Anakin as his Padawan. One day George explained that Jedi work in pairs, like the Sith, so he changed it so that Obi-Wan was a Padawan with a master."

0.21 Nute Gunray (Nute Gunray, right) and Bane Hasko (Jerome Blake) are under the orders of Darth Sidious (Ian McEwan, left).

0.22 John McCutcheon's concept art for Obi-Wan Kenobi (December 15, 1995).



0.22

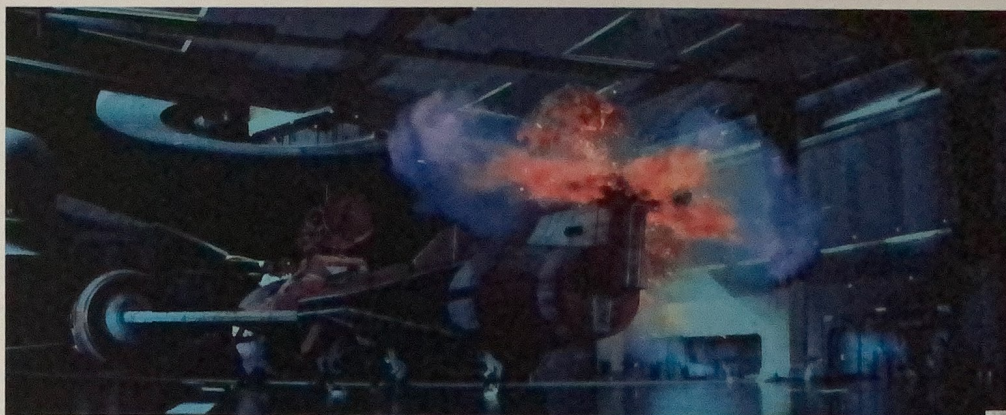


CC	C. England	J. Mann	JAK	Paul McCallum
	J. Weaver	P. Thorne		Kathryn Farron
	H. Smith	P. Fitzgibbon		Dorey Chiong
	N. Gorman	P. Sweeney		
	G. Moran	D. Sullivan		

"Shortly after finishing the model, they destroy it inside the hangar bay. It blows up. The first couple of times they blew things up it's kind of hard, but after a while you start building them and you realize you're building it just to blow it up."

John Goodson / Model Maker

- 225 Steve Goutley, John Knoll, George Lucas, and Doug Chiang inspect the Republic Cruiser model.
- 226 The model of the Republic Cruiser undergoes an inspection. A great deal of technology with a high level of detail is involved in the building of the model.
- 225-26 This Model Build/Shoot Gantt chart, dated February 27, 1998, outlines the planned schedule for 1998, including building models and sets in time for motion control and pyrotechnic shoots. Some shoots (like the "Anchorhead Arena") are exterior, while others are on the stages indicated.
- 227 The production calendar showing the shooting plan for the Federation hangar sequence, outlining the building of the hangar and pyrotechnic R&D, as well as scheduling three days to complete the lighting setup.
- 228 First frame showing the dramatic explosion and the destruction of the Republic Cruiser.



FEDERATION HANGAR SHOOT February 1998

DATE	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
PREVIEW						
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Mythology is basically a psychological summation of history, taking an event in history, converting it into something that is psychologically more pleasing to an audience. I also watch a movie, look through research books, picture books, various locations, design ideas, and architectural books. It's fun. It gives me a chance to think, which I couldn't do before because I was always being hit on to make decisions or to come up with instantaneous answers to everything.

Toward the end of the day I will summarize whatever I picked up during that day and put it into a notepad. I will also spend time, an hour at the most, working on an outline of scenes. Ultimately there will be approximately 50 scenes per movie, so I have to come up with 150 scenes. If I come up with a few scenes a day pretty soon I will start to get the overall flow of the movies.

It's more difficult to lay the scenes out and say specifically which scenes are going with each other, which is telling the story. I'm running the story over in my mind all the time and contemplating various scene fits. What would it be like if I did this? What if I started here? There's a lot of mechanics that have to happen, and then there's

the entertainment value—is it funny? Does it move forward? Is it exciting?—all of these kind of issues. I'm constantly running those things past a scene until something says, "Oh this is a nice scene. This feels right," and then I stick it in my little binder and I keep building.

Toward the end of this process, around Christmas time, I will start going through the outline, filling in all of the blanks and finishing it. Then in January I start the hard part, which is writing pages.

Writing is a very meditative experience. You have to drive a lot of stuff out of your head, you create a world, and then you start walking around in that world. It's a very psychologically interesting experience. And sometimes you want to go places and can't and you end up going to other places and it's not something you have complete control over.

There's no way to write without writing from yourself. The stuff gets made out of things that you care about, whether you have actually lived them or not. It's hard to write in the abstract, without having some emotional connection to the material. So when I write a scene I write a scene that moves me, or I care about, or it's something that is personal to me.

January 15, 1995

George Lucas if starts with me sitting here doodling in my little binder but it ends up with a couple of thousand people working together in a very intense emotional creative way to pull it off. It goes from the nanies to the producers to the publicist to my assistants to ILM to Skywalker Sound to the camera crews, sound crews, construction crews, and the actors. You can't do it without everybody pulling together in the same direction. When it's all in my binder it's just a dream. I can sit here and say, "Wouldn't it be great if...?" but pounding that into reality takes a huge amount of effort.

Lucas formed JAK Film Inc., named after the first initial of each of his children—Jeff, Amanda, and Katie—to oversee pre-production and development of the new series, and JAK Productions Ltd. to produce the movies.

George Lucas the process of working with the art department is something I started on Star Wars with Ralph McQuarrie. I finished

"I decided that I was going to direct Episode I because I didn't think I could direct through somebody again. It's easier to do it yourself than it is to have somebody else do it for you, if it's something you care about."

George Lucas

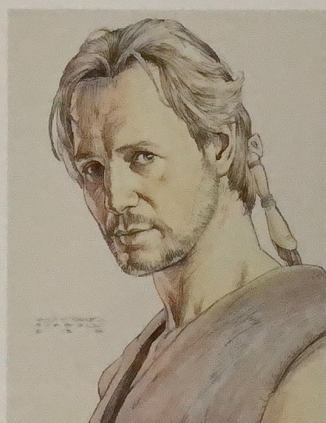
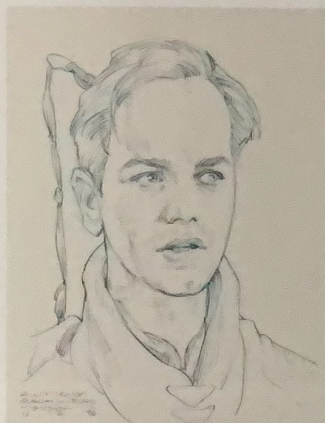


Meeting Notes - 1/18/98 - Gc - 12-18, 20-22, 23-25, 29-31, 1/98		
VFX #	Elements	Notes
FX04-012-010	VFX120-1	Federation battleship hallway
FX04-012-011	VFX120-2	Obi-Wan Kenobi's entrance
FX04-012-012	VFX120-3	Qui-Gon Jinn's entrance
FX04-012-013	VFX120-4	Qui-Gon Jinn's entrance
FX04-012-014	VFX120-5	Qui-Gon Jinn's entrance
FX04-012-015	VFX120-6	Qui-Gon Jinn's entrance
FX04-012-016	VFX120-7	Qui-Gon Jinn's entrance
FX04-012-017	VFX120-8	Qui-Gon Jinn's entrance
FX04-012-018	VFX120-9	Qui-Gon Jinn's entrance
FX04-012-019	VFX120-10	Qui-Gon Jinn's entrance
FX04-012-020	VFX120-11	Qui-Gon Jinn's entrance
FX04-012-021	VFX120-12	Qui-Gon Jinn's entrance
FX04-012-022	VFX120-13	Qui-Gon Jinn's entrance
FX04-012-023	VFX120-14	Qui-Gon Jinn's entrance
FX04-012-024	VFX120-15	Qui-Gon Jinn's entrance
FX04-012-025	VFX120-16	Qui-Gon Jinn's entrance
FX04-012-026	VFX120-17	Qui-Gon Jinn's entrance
FX04-012-027	VFX120-18	Qui-Gon Jinn's entrance
FX04-012-028	VFX120-19	Qui-Gon Jinn's entrance
FX04-012-029	VFX120-20	Qui-Gon Jinn's entrance
FX04-012-030	VFX120-21	Qui-Gon Jinn's entrance
FX04-012-031	VFX120-22	Qui-Gon Jinn's entrance
FX04-012-032	VFX120-23	Qui-Gon Jinn's entrance
FX04-012-033	VFX120-24	Qui-Gon Jinn's entrance
FX04-012-034	VFX120-25	Qui-Gon Jinn's entrance
FX04-012-035	VFX120-26	Qui-Gon Jinn's entrance
FX04-012-036	VFX120-27	Qui-Gon Jinn's entrance
FX04-012-037	VFX120-28	Qui-Gon Jinn's entrance
FX04-012-038	VFX120-29	Qui-Gon Jinn's entrance
FX04-012-039	VFX120-30	Qui-Gon Jinn's entrance
FX04-012-040	VFX120-31	Qui-Gon Jinn's entrance
FX04-012-041	VFX120-32	Qui-Gon Jinn's entrance
FX04-012-042	VFX120-33	Qui-Gon Jinn's entrance
FX04-012-043	VFX120-34	Qui-Gon Jinn's entrance
FX04-012-044	VFX120-35	Qui-Gon Jinn's entrance
FX04-012-045	VFX120-36	Qui-Gon Jinn's entrance
FX04-012-046	VFX120-37	Qui-Gon Jinn's entrance
FX04-012-047	VFX120-38	Qui-Gon Jinn's entrance
FX04-012-048	VFX120-39	Qui-Gon Jinn's entrance
FX04-012-049	VFX120-40	Qui-Gon Jinn's entrance
FX04-012-050	VFX120-41	Qui-Gon Jinn's entrance
FX04-012-051	VFX120-42	Qui-Gon Jinn's entrance
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FX04-012-066	VFX120-57	Qui-Gon Jinn's entrance
FX04-012-067	VFX120-58	Qui-Gon Jinn's entrance
FX04-012-068	VFX120-59	Qui-Gon Jinn's entrance
FX04-012-069	VFX120-60	Qui-Gon Jinn's entrance
FX04-012-070	VFX120-61	Qui-Gon Jinn's entrance
FX04-012-071	VFX120-62	Qui-Gon Jinn's entrance
FX04-012-072	VFX120-63	Qui-Gon Jinn's entrance
FX04-012-073	VFX120-64	Qui-Gon Jinn's entrance
FX04-012-074	VFX120-65	Qui-Gon Jinn's entrance
FX04-012-075	VFX120-66	Qui-Gon Jinn's entrance
FX04-012-076	VFX120-67	Qui-Gon Jinn's entrance
FX04-012-077	VFX120-68	Qui-Gon Jinn's entrance
FX04-012-078	VFX120-69	Qui-Gon Jinn's entrance
FX04-012-079	VFX120-70	Qui-Gon Jinn's entrance
FX04-012-080	VFX120-71	Qui-Gon Jinn's entrance
FX04-012-081	VFX120-72	Qui-Gon Jinn's entrance
FX04-012-082	VFX120-73	Qui-Gon Jinn's entrance
FX04-012-083	VFX120-74	Qui-Gon Jinn's entrance
FX04-012-084	VFX120-75	Qui-Gon Jinn's entrance
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FX04-012-086	VFX120-77	Qui-Gon Jinn's entrance
FX04-012-087	VFX120-78	Qui-Gon Jinn's entrance
FX04-012-088	VFX120-79	Qui-Gon Jinn's entrance
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FX04-012-091	VFX120-82	Qui-Gon Jinn's entrance
FX04-012-092	VFX120-83	Qui-Gon Jinn's entrance
FX04-012-093	VFX120-84	Qui-Gon Jinn's entrance
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FX04-012-095	VFX120-86	Qui-Gon Jinn's entrance
FX04-012-096	VFX120-87	Qui-Gon Jinn's entrance
FX04-012-097	VFX120-88	Qui-Gon Jinn's entrance
FX04-012-098	VFX120-89	Qui-Gon Jinn's entrance
FX04-012-099	VFX120-90	Qui-Gon Jinn's entrance
FX04-012-100	VFX120-91	Qui-Gon Jinn's entrance
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FX04-012-106	VFX120-97	Qui-Gon Jinn's entrance
FX04-012-107	VFX120-98	Qui-Gon Jinn's entrance
FX04-012-108	VFX120-99	Qui-Gon Jinn's entrance
FX04-012-109	VFX120-100	Qui-Gon Jinn's entrance

2.20 The Jedi draw their lightsabers to defend themselves against the attacking druids in the Trade Federation battleship hallway. They have just escaped the room full of poison gas behind them. Jinn McQuinn: "At one time the Jedi were going to be more like a UN peacekeeping force with a regimented costume. Obi-Wan's age changed all over the place—at one point he was substantially older like a youngish old. For a long time we had a character who was samurai-like, with a ponytail and long sideburns, but as it evolved that character split into Obi-Wan and Qui-Gon. Now there was an older mentor, and it told us a lot more about who the Jedi were. It wasn't like a peacekeeping force—it was more like a temple with an apprenticeship. When that happened, we revised the look. In the end, to make a strong connection between the Obi-Wan we knew and the Obi-Wan in the prequels, we went back to the original costume design and said, 'Let's let every one wear those beautiful light brown robes.'"

2.30 Meeting notes following a review of the VFX (January 6, 1998). The "VFX" is J.J.'s internal shot reference, the "Elements" is the specific reference for the film used in the shot. The "Notes" list the work needed to be done, including "Design to design hallway." It was common for live-action shots to be completed before the background sets and environments were fully designed.

2.31 Jinn McQuinn's concept for Qui-Gon, dated December 6, 1996, used Ewan McGregor as a model.



2.32 Initially Obi-Wan was to be the main protagonist but as the story evolved it was decided that there should be two Jedi—a master and a Padawan. After Liam Neeson had been cast, McQuig drew portraits of Qui-Gon with and without a beard May 12, 1997.

2.33-34 Jay Shuster's storyboards, dated May 24, 1996, illustrate that the droids are no match for the power of Obi-Wan and

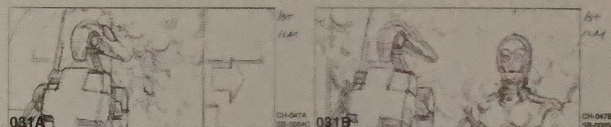


the Force. These show how the Jedi can deflect laser beams with their bare hands, rather than relying on light sabers, as well as use telekinesis to smash the droids.

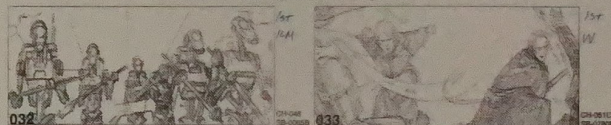
2.35 A version of the script was made incorporating Benoit Jett's storyboards. The two Jedi emerge from the reception room, ready for battle, Caneen having failed to poison them with deadly gas.

MUTE
They must be dead by now. Blast
what's left of them.

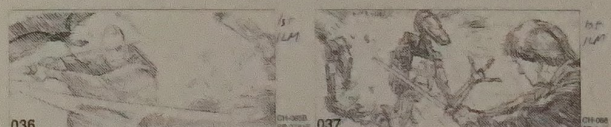
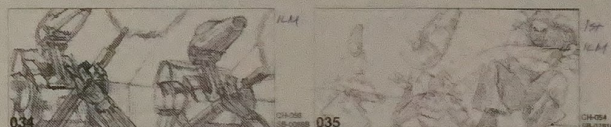
The hologram fades off, as a BATTLE DROID, OWO-1, cautiously opens the door. A deadly green cloud billows from the room. BATTLE DROIDS cock their weapons as a figure stumbles out of the smoke. It is TC-3, carrying the tray of drinks.

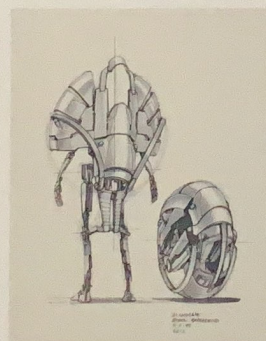


TC-3
Oh, excuse me. so sorry.

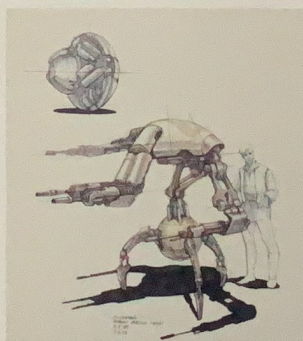


The PROTOCOL DROID passes the the armed camp just as two flashing laser swords fly out of the deadly fog, cutting down several BATTLE DROIDS before they can fire.





2.37



2.38

- 2.30 The battle droids presented an real threat for the Jedi. Doug Chiang: "I started to explore how do we make a more menacing version. At that point George said, 'Okay, let's do a really weird mechanical droid that breaks the human form.'" Concept art by Doug Chiang (March 29, 1996, 4 days) featuring Ohi Wan Kenobi.
- 2.37-38 Early concept art by Doug Chiang, dated May 2 and 5, 1995. Chiang: "My initial take on that was to create a walking gun platform, make it very alien, very bug-like. It was never meant to walk. That's why it has three legs. It's a tripod. It rolls, gets into its position, positions itself, and it's a gun platform, essentially."
- 2.39 Doug Chiang: "Once we were shooting on set, we were trying to make them even more invincible. The question became, 'Jedi could easily slice them down, so how do we make them stronger?' 'Give them force fields.' Computer render of the force shield concept to check the color matching. Hal Hickel/Lead Animator: "I encourage producers not to have three-legged characters. Two legs and four legs are okay, but it's hard to come up with a cycle for three limbs that doesn't look like there's just an extra leg. It's an issue of balance."
- 2.40-41 Final frame and set still of Qui-Gon using his lightsaber to burn through the metal doors to reach Ganrey while Ohi-Wan attempts to fend off the attack. The filming process involved shooting the scene with the action and then filming with only the background, to get a consistent environment for the visual effects that would be added later.
- 2.42 Members of the crew, clad in white and wearing droid masks, represent the battle droids so that the actors have a reference when performing their fight choreography.



2.39



the first draft of the film but when I started the second draft it took me about a year. That year I'd describe a character to Ralph like Darth Vader and say, "He's black and has a dark mask and a flamboyant helmet." When I'm working on the script, it is very ephemeral, and he made it real for me. If I said it's a spaceship and it's all white inside, he was able to put the detail in so I could see it. So when I go back and do a second draft I have a much clearer picture of what it is, and I can be more specific about how I describe things. It's getting closer to directing.

When you are writing a screenplay you don't know the logistics of a room. You don't know where the door is in relationship to the desk. But when you have a drawing of it you can say, "I know the door is going to be five paces from the desk." You start staging things, and think, "Does he talk as he walks from the door? No. It's too far and it won't play. I'll cut to him at the desk before I can have him talk." Those are the kinds of things you discover on a set, which means you are modifying the script to fit the reality you have to cope with. The art department helps me deal with logistical problems very early on, which means it's easier for everybody.

Doug Chiang / Design Director During the autumn of 1994, George Lucas announced that he was staffing up an art department for the first of three new prequels. For many

designers and artists who grew up as the *Star Wars* generation, myself included, it was the opportunity of a lifetime.

I'm a self-trained artist—I went to film school, not art school—so when I started working at ILM in 1989, I set aside almost a year, at night, to polish my art skills. I developed my own aesthetics—taking organic forms and merging it with technology. It was the mixture that George was looking for, because in *Star Wars*, 80 percent of it is real, but George makes it special by adding 20 percent that takes it into the exotic. Without knowing it, I stumbled on that process. I became the design director on the new project.

I was familiar with the original trilogy designs from Joe Johnston and Ralph McQuarrie, and I trained my whole career to design that. In January 1995, prior to starting at Skywalker Ranch, I had a meeting with George. I thought it was just a meet and greet, but he said, "Put all those ideas aside. We're going to start fresh." It was a shock. I felt like I had been studying for the wrong test. But in hindsight that gave me clarity into the whole design philosophy for the *Star Wars* universe and how George thought about it.

He described all these things that he wanted: a new racing spectacle, which became the podracing scene, a new planet

culture that had an elegant design—that was Utopia, which became Naboo. I had pages of notes but I didn't know how it all fit together.

My first day was January 15, a Sunday. I had a mental block because of the sheer amount of work to do, and the pressures of living up to Johnston and McQuarrie. I tackled that by giving myself goals: three to five designs every day, 25 by the end of the week, for George.

Paul Duncan The first day you drew the droids owned by the trade barons/robber barons, later called the Neimoidians.

Doug Chiang The brief George gave was, "Create a robotic stormtrooper." The stormtroopers were black-and-white and look like skeletons, so I thought, "How about turning human

musculature into mechanical forms?" and see if that went anywhere. So I took the human anatomy and made it robotic. The stylized body shapes of African sculptures also influenced them.

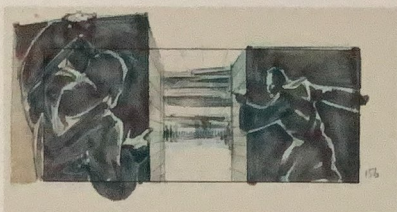
Paul Duncan You did five drawings on January 15.

Doug Chiang These were all explorations and I think they're complete failures. I was trying to get all the bad ideas out to find where George wanted to go with this.

Paul Duncan But if you look at drawing number 002, the rib cage is very similar to the final rib cage. And in number 005, the elongated head is similar to the final head, and the eyes are exactly like the final design. You are finding pieces.

Doug Chiang Yes.





Paul Duncan You are working on multiple designs at the same time, but continue drawing the droids on January 25, 26, 31, and then in drawing 198, on April 24, you're close to the final form.

Doug Chiang It's very collaborative. George has exquisite taste in form language, and it's surprising how quickly he can read an idea and see if it conveys the personality and works for the story that he wants to tell. In the art reviews he'll pick out certain things that he likes—like the eyes, the head, or the rib cage—then it was my job to take those elements and make the design structurally sound.

Paul Duncan Did you have context for the story and the environments they were to be seen in?

Doug Chiang Not yet. It wasn't until a year and a half afterward that George started to share how the story all fitted together. I was designing in its purest form where we were trying to come up with elements that weren't preconceived ideas. It was empowering for me because I wasn't there just to illustrate his ideas but I was contributing my own ideas.

The art department was formed in January of 1995, based in the attic above George's office at Skywalker Ranch, starting with Terry Whillatch and myself.

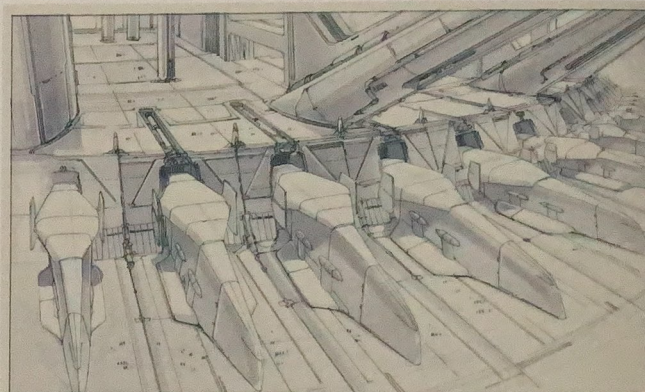
Terry Whillatch / Concept Artist I am a paleo reconstructionist and animal artist—ILM needed someone who could do animals well.

Doug Chiang We would have art reviews every Friday.

Terry Whillatch George would discuss the characters, the vehicles, architecture—what was most pressing on his mind. Then Doug would immediately hold a meeting after that meeting, to review everything that was said and send us to our respective drawing boards, imaginations quivering and assignments in hand, to design what was within our realms of expertise. Sometimes there were some crossovers, but most of the time we each had our various areas—storyboarding, environments, costume—and mine was anything having to do with an animal or creature. We'd work all week creating, mostly in traditional

"There is a cohesive design philosophy from Episodes I through VI that is absolutely rock solid. It grounds it in reality. It would have been easy to do X-wings and TIE fighters and Death Stars in I-III, and the fans would have loved that, but that's not pushing the art form any further."

Doug Chiang



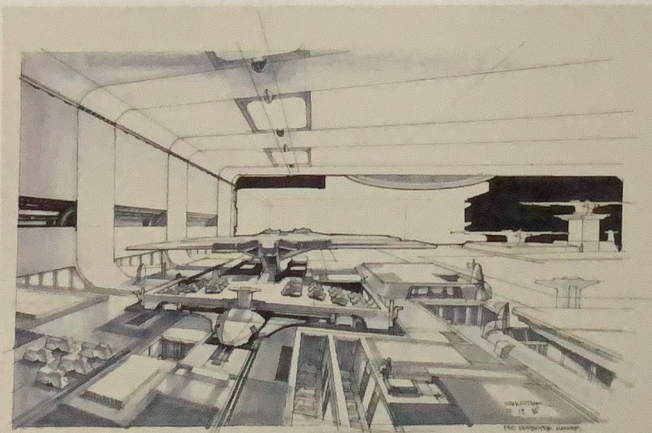
243 Storyboard by Ed Nuttall showing the Jedi arriving at the hangar bay as they attempt to escape.

244 Jay Shuster's concept, dated December 19, 1996, for the Federation Destroyer hangar shows Multi-Trip Transports (MTTs) loading onto Trade Federation landing ships.

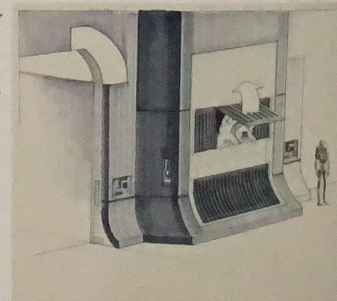
245 Landing ship concept by Doug Chiang (November 29, 1995). Chiang: "They are arranged like propagating flower seeds. That idea didn't work for George because he felt the vehicles lacked personality."

246 Shuster's design (January 5, 1997) shows the Jedi using an air vent to access the hangar bay.

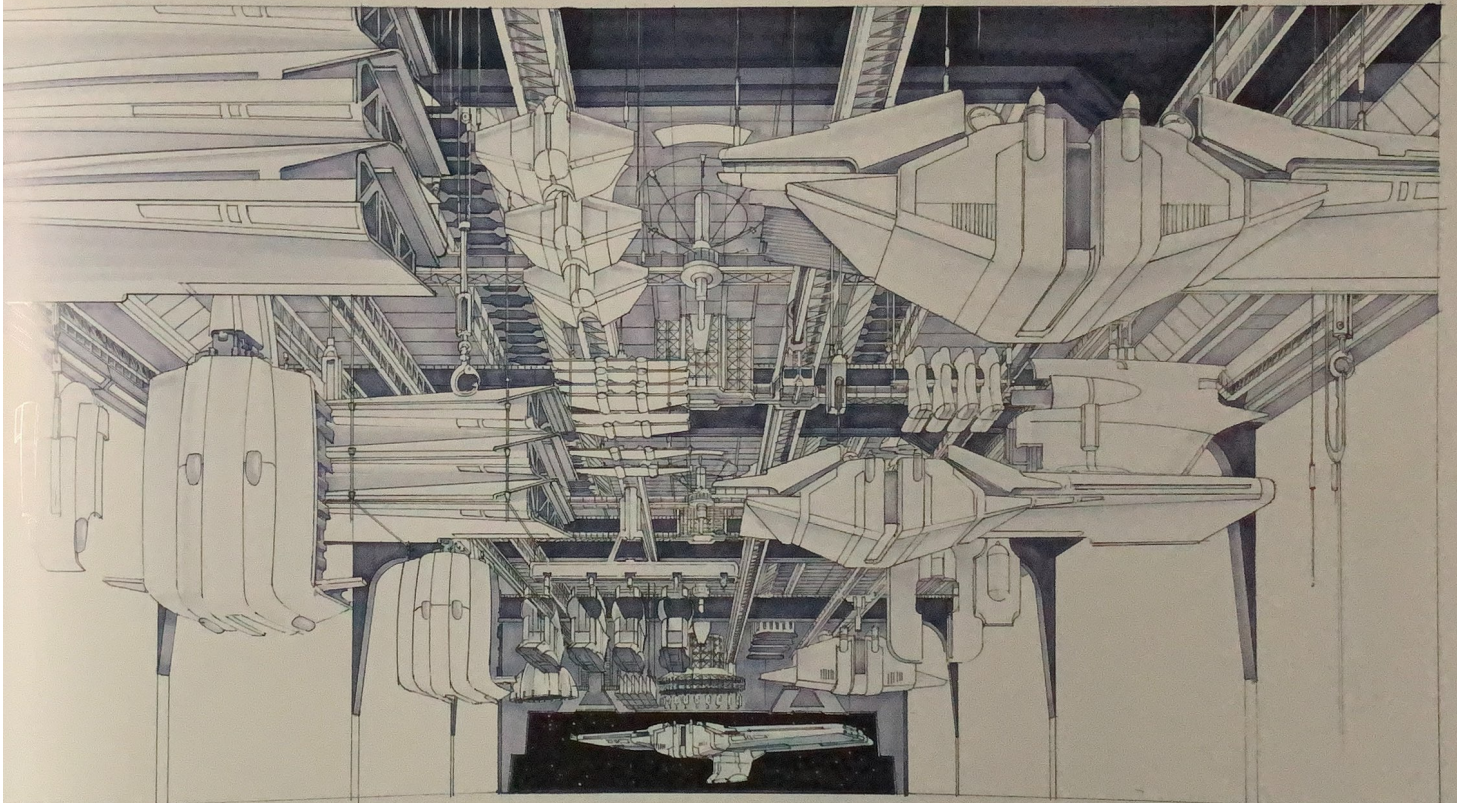
247 Concept for the Federation hangar by Kurt Kaufman (April 6, 1996) with ideas on how to store the ships. A great deal of thought was put into determining the ships' storage configuration and how they would be dispatched for battle.



244



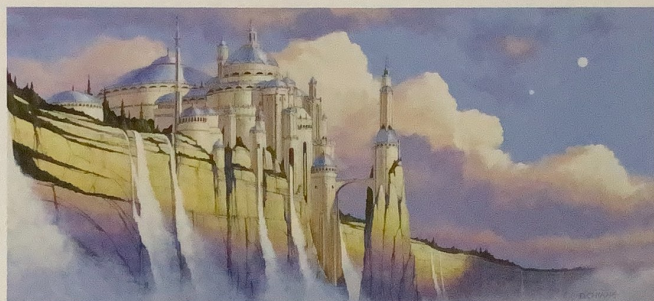
246



E. KAUFMAN
FEDERATION HANGAR
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“George has developed a new class of filmmaking talent that, though technical, is also artistic. It’s giving me hope that we’ve finally reached the era of convergence, getting human beings and machines to talk to each other in a meaningful way.”

Rick McCallum / Producer



2.49

media—pencil and markers and acrylics—then we’d present the results to George.

George Lucas Most filmmakers do not have a preproduction process that goes on for two and a half years. We would bat ideas around, and it was a give and take of creative ideas. It was a lot of fun.

Paul Duncan You were willing to accept ideas and comments?

George Lucas As long as I could say no. I had to tell them, “Look, I’m going to reject a lot of the things you give me. So just accept that as a given and don’t worry about it. It’s nothing personal. I’m trying to think of the overall movie. There are things about this I know that you won’t know. I’ll be making decisions that seem arbitrary but when it’s done it’ll make sense.” We did that and they were good about it.

I can make a decision in 15 seconds. People have to perceive what’s going on very quickly. In a normal movie, if the audience sees a 1945 jeep, they can jump to the conclusion that World War II is going on, and they know all kinds of things about that. We’re dealing with things that people have never seen before, and they have no idea what the cultural connections of these things are. So if it’s hard to understand what it is they’re holding in their hand, or what it is used for, or what it is they’re wearing, they’re thinking about what it is that he’s holding instead of what’s going on in the scene. Since we have thousands of things to think about and design in a

movie, you can’t be obscure about anything, because once you put them all together, it gets too obscure for the audience to follow.

Doug Chiang In one of my first meetings with George, he described the spaceships. The next week I came in with drawings that were very typical of the Star Wars universe. George said, “No. Let’s push the envelope a little bit further. Let’s try Art Nouveau as an influence. Let’s try chrome.” It was exciting but we weren’t quite sure how that would work. As we started designing, we related our designs to the history of industrial design in the US. We equated Episode I to the early 1900s and the 1920s, where industrial design and art were very much intertwined. Everything was beautifully designed and had a more handcrafted look.

As we progress through Episodes II and III, we’ll slowly see the design segue into the 1970s, when assembly-line aesthetics started taking over, and things began to look a little more manufactured, which is *A New Hope*’s aesthetic. It works as a design philosophy because it happened in our history.

Terry Whillatch George mentioned this funny, gangly, goofy character, lovable and yet cowardly. He was going by the name “Corky.” At that time, George’s young son was calling every vehicle a “jar jar.” George thought that was cute so the character’s name became “Jar Jar.”

All we had was a personality, and he was a large-eyed creature that could express a great deal of emotion and

feeling through his eyes. By chance I had brought a little sketch I had done at ILM for my own entertainment. George saw that and said, “These eyes are like Jar Jar’s,” and we went on from there.

Jar Jar is an amphibious creature; he can survive both in the water and on land. So, like an amphibian, he has smooth, permeable skin. He can absorb oxygen molecules through the water to be under the water. I got a lot of my influence from hadrosaurs, duck-billed dinosaurs that were semi-amphibious, at home in the water and on dry land. One of the animals that influenced him is the emu. So, if we put an emu, a duck-billed dinosaur, Danny Kaye, and Charlie Chaplin all in one, you would end up with a Gungan.

Paul Duncan You all worked on the character throughout 1995 and 1996. Why so many designs and concepts?

Doug Chiang It was because he was going to be the first synthetic character. I remember distinctly George saying, “Don’t worry about how we’re going to execute this. Just design the best design. The folks at ILM will take care of that.”



2.48

2.48 **Storyboard by Doug Chiang** for the elegant city of Theed, capital city of the Naboo. This artwork was filmed as part of the previsualization process, and later replaced by model shots and computer graphics in the final film.

2.49 **Doug Chiang’s concept design “Theed City”** (August 19, 1997; 2.5 days).

2.50 **Doug Chiang and Charlie Bailey inspect the models for Theed.** Doug Chiang: “Once George had approved the palace concept, which captured the right architectural style, that anchored everything. Knowing that the palace was on a cliff edge, we laid out the whole city plan in foam core. I worked with ILM to create generic buildings that could be reconfigured to that footprint. On our back lot stage, we had several dozen buildings that were dressed differently on each side so we could rotate them to create different streets. It was really wonderful, because out of the puzzle piece of maybe three dozen buildings, we achieved all the backgrounds for Theed.” The models were filmed outside to take advantage of natural light.

2.51 **Terry Whillatch’s sketches of Jar Jar** (later named Naboo), dated March 23, 1995, illustrate her specialization in creature design and environments.



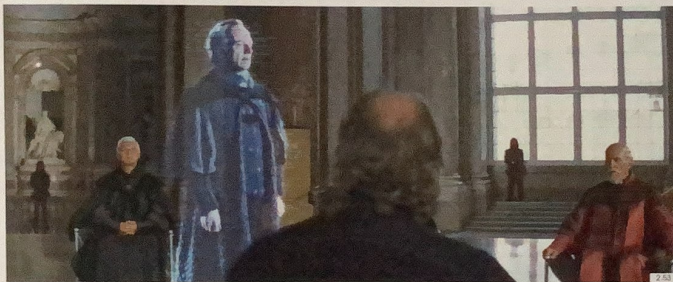
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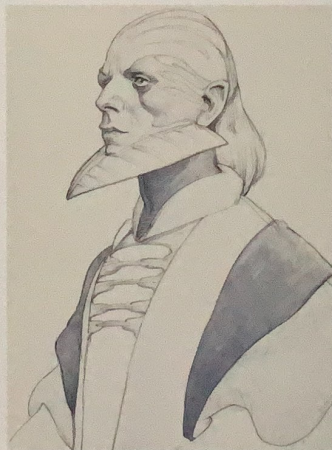


**"Natalie is very strong and mature for her age.
And like Carrie Fisher, she had the personality
to carry the role of a leader."**

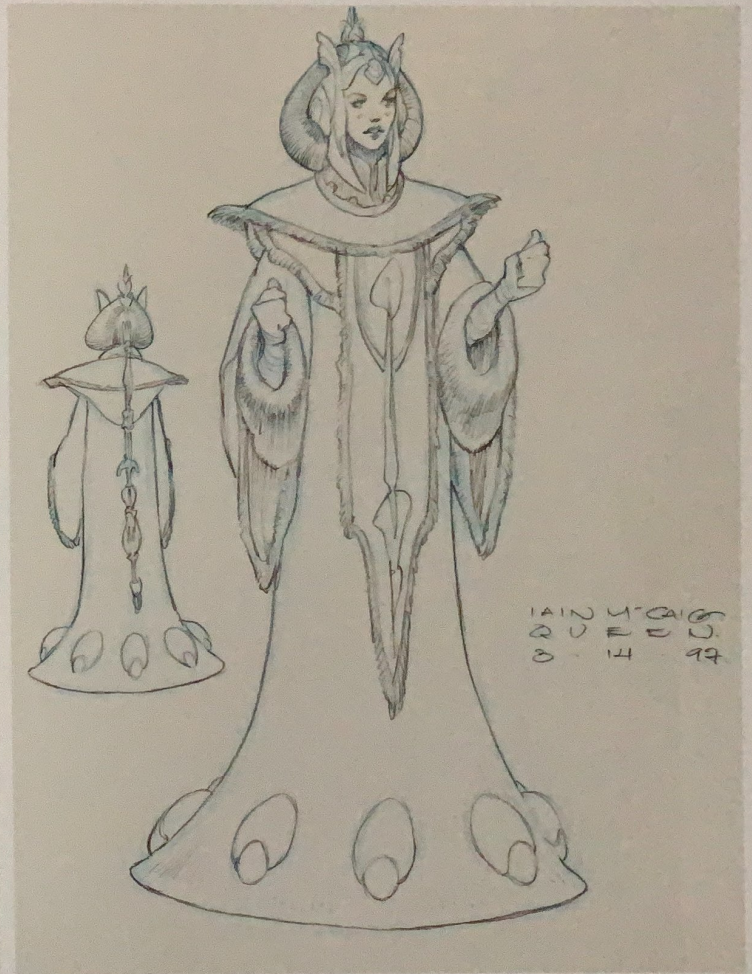
George Lucas



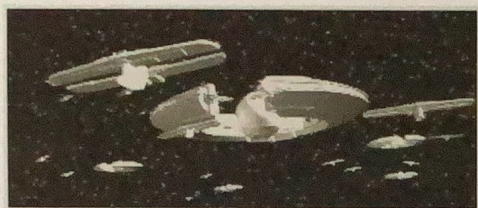
- 2.52 Portrait of Queen Amidala, played by Natalie Portman.
- 2.53 In the Naboo palace throne room, a hologram of Senator Palpatine (Ian McDiarmid) reports that his ambassadors had arrived to negotiate with the Trade Federation.
- 2.54 Jaim McCaig's concept art, dated December 20, 1996, was a suggestion for both Senator Bibble and Senator Palpatine.
- 2.55 Jaim McCaig's design for the queen's costume, dated August 14, 1997. McCaig: "I loved Natalie Portman in *Leon: The Professional* (1994). I think she is an amazing actress. And then I saw her audition tape: where she is substantially older than she was in that film and just a beautiful young lady. So, I thought, that by drawing her as the queen in the concept art will be my way of rooting for her, and maybe George will notice."



2.54



2.55



2.56

Terry Whitlatch When a basic concept was officially approved, I did anatomical orthographical drawings—views of the side, front, rear, top, and often the bottom—of the skeletons, musculature, and anatomical surface for all the alien wildlife and creatures, so they could be modeled, textured, rigged, and animated for ILM. That's at least 9 to 15 technical drawings/ paintings for each approved creature, and there were at least 50 such creatures accepted for the film.

All of these creatures needed to appear real, from their outer coloring to their inner structure. Sometimes I even had to design the dental configurations and the tongue relationships, and at times even needed to animate the creature myself in 2-D to make sure it could do certain things, or to act as a locomotion guide for ILM. A lot of what was done in preproduction was to make sure that Production/ILM (where things get really expensive really fast) had exactly what they needed.

Doug Chiang Once we designed Jar Jar in 2-D on paper and George approved it, I had Tony McVey, a creature sculptor, interpret the drawings and make 3-D maquettes. We did a series

of small character personalities' looks, George picked some, and we made bigger versions. ILM scanned those and it goes into the digital realm. The character is fine-tuned with the animation director's input, because performance ties into it.

My role covered the point at which George was formulating ideas with the art department, through production, when I was designing sets with Gavin Bocquet, the production designer, then through postproduction, working closely with ILM, supervising the practical miniature builds and the digital builds. The film and the designs evolved throughout the whole process, which is why George felt it was very important that there's continuity in that.

Summer 1995

George Lucas I grew up loving cars, going fast, and racing cars. I always wanted to have a race in one of my movies. Once I was involved in an extremely exciting race with a friend of mine at

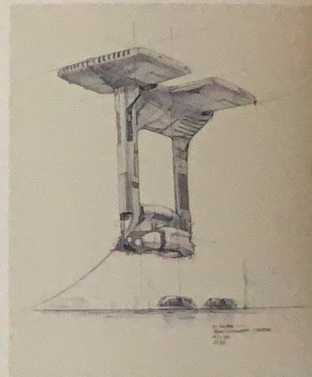
Riverside, I've elaborated on it quite a bit to create what I hope is the ultimate race sequence.

Ben Burtt/Editor In early summer 1995, George gave me a verbal description, and later a paragraph, describing the podrace.

George Lucas This is going to be like the Ben-Hur chariot race. They've got these pods—two engines that are like the two horses—and they're holding on in open cockpits, which are like the chariots. It's a fight to the death.

Anakin goes down the racetrack. He bumps into this guy. This guy crashes and then Anakin has to go through the fireball and go on to the next one. The first lap he's ahead, the second lap he's behind, the third lap he's ahead, the fourth lap he's behind, and finally he wins. That's the story.

Ben Burtt I started developing that visually, which meant collecting footage from movies, newsreels, recording things on TV to VHS, and then transfer it into Avid. I built up a library of vehicle, helicopter, and airplane races. I started shooting cockpit scenes—I built a little cardboard racer at home and had a front projection system, so I put on an IMAX laser disc of



2.58

2.56 CG animatic for the Trade Federation landing ships leaving the battleship to begin the invasion of Naboo.

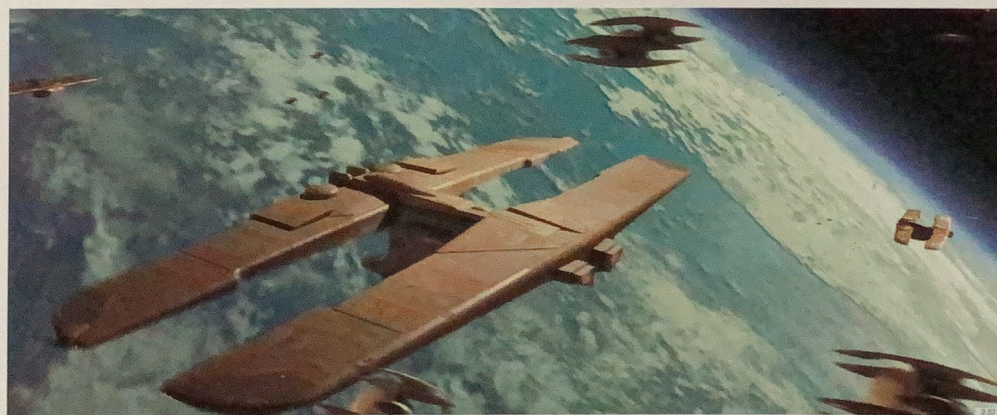
2.57 Final frame of the Trade Federation landing ships over Naboo, a shot supervised by John Knoll.

2.58 Doug Chiang's concept for the mechanism by which the landing ships lower the MTTs to the planet's surface. This early version, dated April 3, 1995, could only lower one MTT. The wings on the final design would be significantly longer.

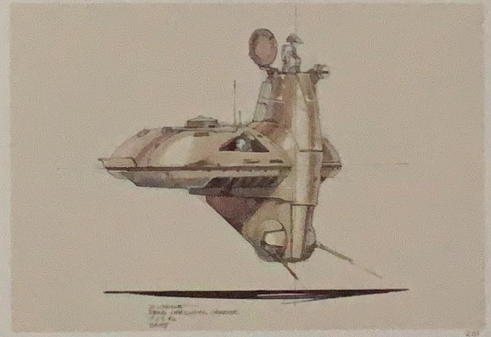
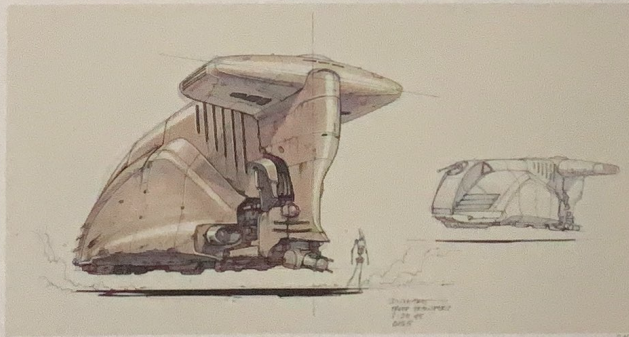
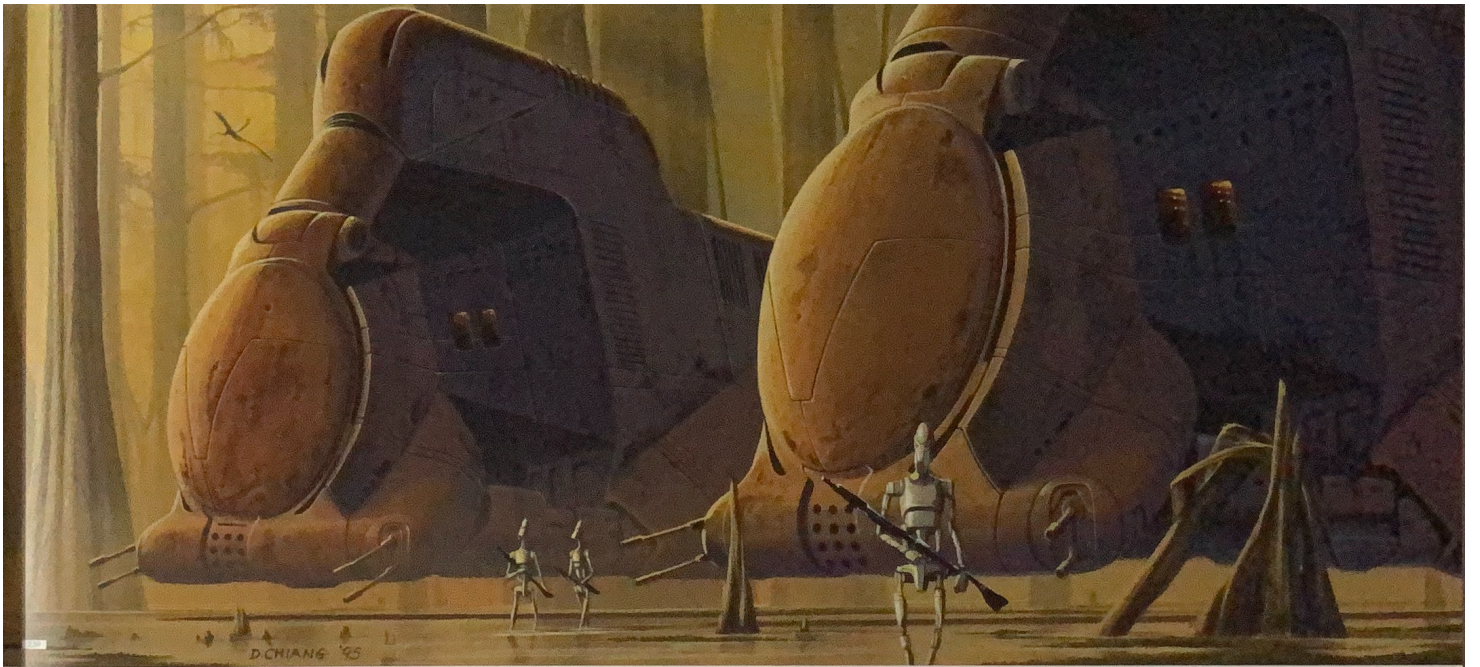
2.59 Doug Chiang's concept for the MTTs landing on the swampy terrain of Naboo. April 17, 1995, 6 days. Chiang: "George wanted a vehicle that carried troops. He described it as a floating locomotive that could plow through anything. The first image that came to my mind was of a charging bull elephant. It worked out very well, because the whole droid army was being given an animal-like personality."

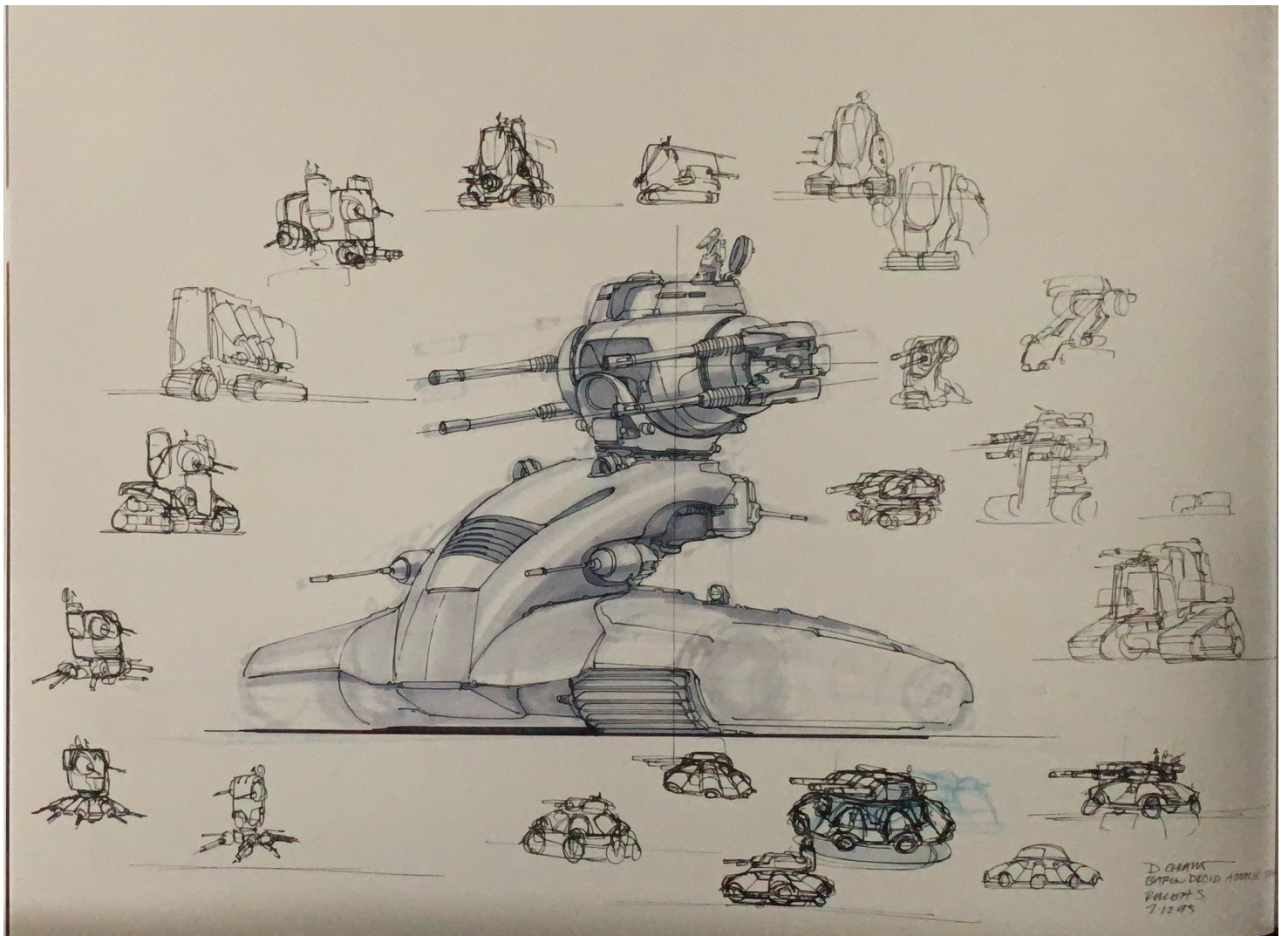
2.60 Chiang's March 20, 1995, concept for the MTT. Chiang: "I saw an exhibit of vintage outboard motors in San Francisco Airport and there was one that was configured like that—it was almost a T shape with the propeller at the bottom. I took a picture and used it for this concept."

2.61 Concept for a droid personnel carrier by Doug Chiang, July 25, 1996.



2.62

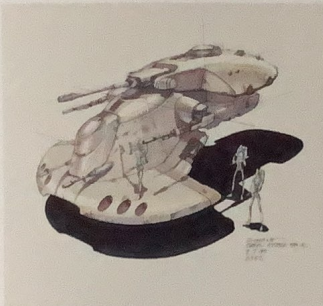




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“The secret of doing these films, like in sport, is to stay relaxed, enjoy yourself, and you come up with new ideas and try to tell a story as best you can.”

George Lucas



2.62 Chiang's sketch concepts for droid attack tanks (July 12, 1995). Chiang gave himself a target of creating five designs each day. He would begin by sketching rough drawings of shapes, then picking out some of those to expand and develop into fuller designs. To speed up his process, he later skipped this step and jumped straight to individual designs.

2.63 Armored Assault Tank (AAT) final design by Chiang (August 7, 1995).

2.64 Sean Casey, Mark Siegel, and David Owen building the scale model of the AAT. Its smaller maquette is on the table. Maquettes were developed from the concept art. Lucas would suggest changes and the design would be finalized to become the template for the scale model. Sometimes the maquette or scale model would be scanned for CG modeling.

2.65 Doug Chiang artwork for a Single Trooper Aerial Platform (STAP) (August 19, 1995, 4 days). The design was influenced by a hummingbird and earned a “fabulous” stamp from Lucas. Chiang: “Once George approved that design, I had no idea how they were going to fit into the story, so I started to come up with ideas.”

2.66 July 13, 1995, concept design for battle droid speeder by Doug Chiang, again using the insect world as an influence, this was based on a cicada.



flying through the Grand Canyon and had my son Benny drive against this background. I filmed a composite of that and his friend with an alien mask. If I had to put a model on a stick and fly it in front of a camera then I did that as well. I cut that together with racing car footage.

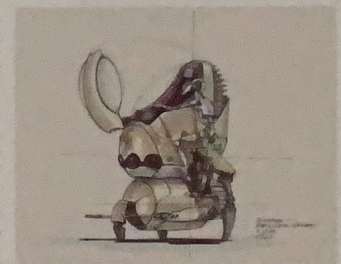
George Lucas I've done this on all the movies. In *Star Wars* I used old war footage to make storyboards in motion for the Death Star attack sequence. We did hand-drawn animation, animatics, for *The Empire Strikes Back*, and we did videomatics—using video to shoot models against a blue background—on *Return of the Jedi*. This way ILM knows exactly what they have to do, how many frames it is, and how it's going to fit into the flow of the film. It's very hard to do that on a piece of paper. You really have to see the kinetics, the cinematic qualities of the shot.

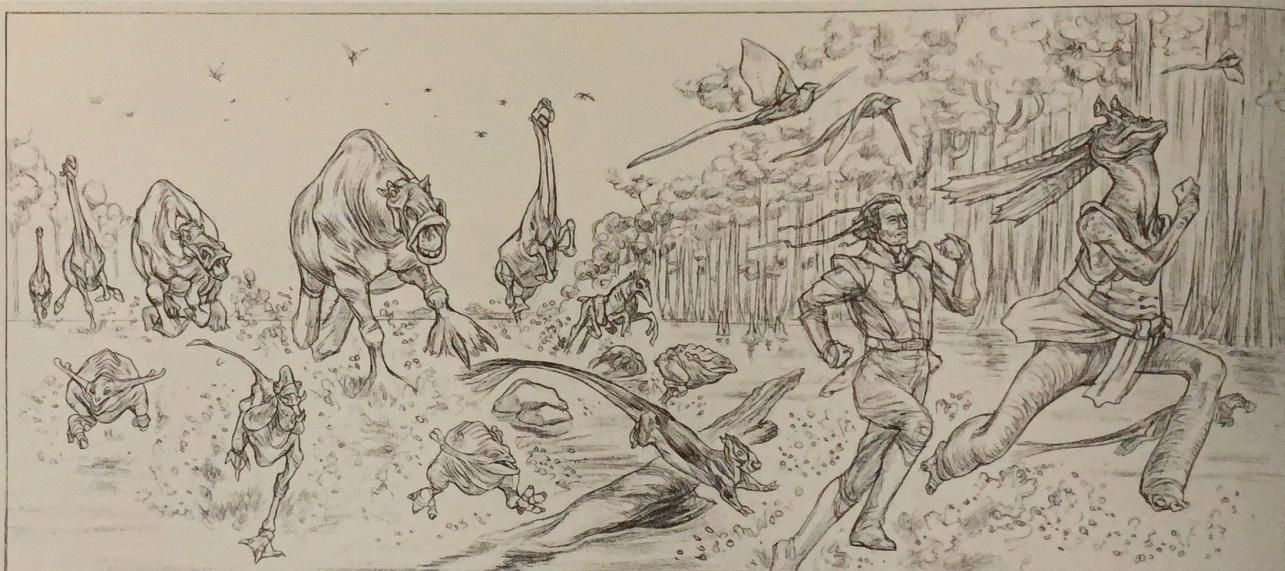
Bon Burtt I worked on that first cut, which was 22 minutes, for months. It was a race with every possible wild thing that could happen: cars colliding, cars going off the track and blowing up, someone passing somebody and sticking something in the tires and they'd crash. I put some temporary sound to it, jets and airplanes, and that's where we started. It was crude, but George loves to work that way. It gave him something to react to.

Although the footage jumped from a car to a model to an airplane, we found that it wasn't that confusing, because so much of it was cutting properly: the screen direction, the geography, the matching of speeds or the placement of the viewer's eye

in the frame. For example, if your eye is directed to three quarters across the frame on shot A and in shot B your eye naturally picks up the next thing in the same place then it's a successful, smooth cut. That's the magic of editing and that's where George is very adept.

George Lucas There's maybe five or 10 minutes of the movie that doesn't have digital characters, digital effects, or action sequences, so we decided to do animatics of the whole thing.





THE SPIN-OUT, REMOVED FROM THE FINAL CUT OF THE FILM

208

Ben Burtt That led to me tackling the film sequence by sequence: the sword fights, the underwater submarine scenes, the end battle. The idea is for it to be a living, dynamic storyboard, so that when George is on the set, he can show ILM what they need to create. "I want this angle, this speed, from this point of view." That way it's efficient.

This was an important process for George because ultimately he was going to have to pay a tremendous amount of money for each second of film, and you damn well better know as a director going in what you need to shoot. If I can go in one day and cut 10 shots out of a sequence and it will still work, if each of those shots cost \$100,000, it's certainly more than paid for my salary on this film from a producer's standpoint.

September 1995

David Dozoretz / Previsualization Effects Supervisor I was the first computer artist hired on the film, in September 1995, and the podrace was my first responsibility. We built 3-D models of all the podracers in the terrain so that they can really zip by the

camera. We filmed puppets of the pilots—Robert Barnes made them out of foam—on a makeshift green screen over in the tech building on the Ranch. Using ElectricImage Animation System and Adobe After Effects, we combined all that with storyboards that Iain McCaig drew and replaced the stock footage in Ben Burtt's edit. It was also our job to figure out the continuity of this thing. If there are 13 racers and five of them die, we had to keep track of where each racer was at every mile.

Animatics are this amazing visual storytelling tool because one guy on a computer can try a million things. The computers are getting faster, but we try to keep it very low resolution, because if George asks, "Move this thing over here," we print ourselves on trying to get it to him in 20 minutes. Our record is once we did 75 shots in a day, which is an enormous amount of work for only four guys, but we loved it.

George Lucas When Ben and I got finished he'll have sound effects and music and everything on there so it will be a finished piece of film. I'll just have to reshoot it with higher quality camera and higher quality podracers and higher quality special effects, but the sequence itself in terms of the piece of film will be done. It will just be done at a very low quality.



- 2:57 Concept by Tony Wright (March 13, 1996) depicting Obi-Wan and Jar Jar "Bliss," along with a number of creatures, fleeing the oncoming droid army. Note that Jar Jar is running forward, but his eyes are looking behind him.
- 2:58 Tony Wright's concept art for the swamp chase. Wright noted: "The trees are actually part of the root system of one giant tree. Holes and funnels tend to be poisonous and vivid in color."
- 3:00 Doug Chiang's revision of Obi-Wan and Jar Jar fleeing from the droid army (March 13, 1996, 3:75 days).
- 3:70 Final frame of Qui-Gon and a number of Naboo creatures racing from the oncoming MTTs.



"Jar Jar was an alien creature, sort of insecure, but cute and loveable. Very humorous, but maybe with a touch of pathos because this is a character that had been exiled from his homeland and was trying to make do in the adverse circumstances in which he found himself."

Terryf Whillatch / Concept Artist



2.71 Terryf Whillatch's early concept for the "Gungan" world and its inhabitants dated February 3, 1993. George Lucas: "The names came from everywhere. [daughter] Katie's named a couple of the characters. 'Gungo' and 'Jar Jar' came from [son] Jett."

2.72 Gungan concepts by Terryf Whillatch March 20, 1993. A coastal Gungan leans on a dog-like creature. The top left corner of the picture shows an inflated Gungan building on the idea that they inflate under low pressure. Whillatch: "I started out armed only with the idea that Jar Jar was amphibious, bipedal, tall, gawky, clumsy, albeit earnest and well-meaning and had a personality like Charlie Chaplin or Danny Kaye."

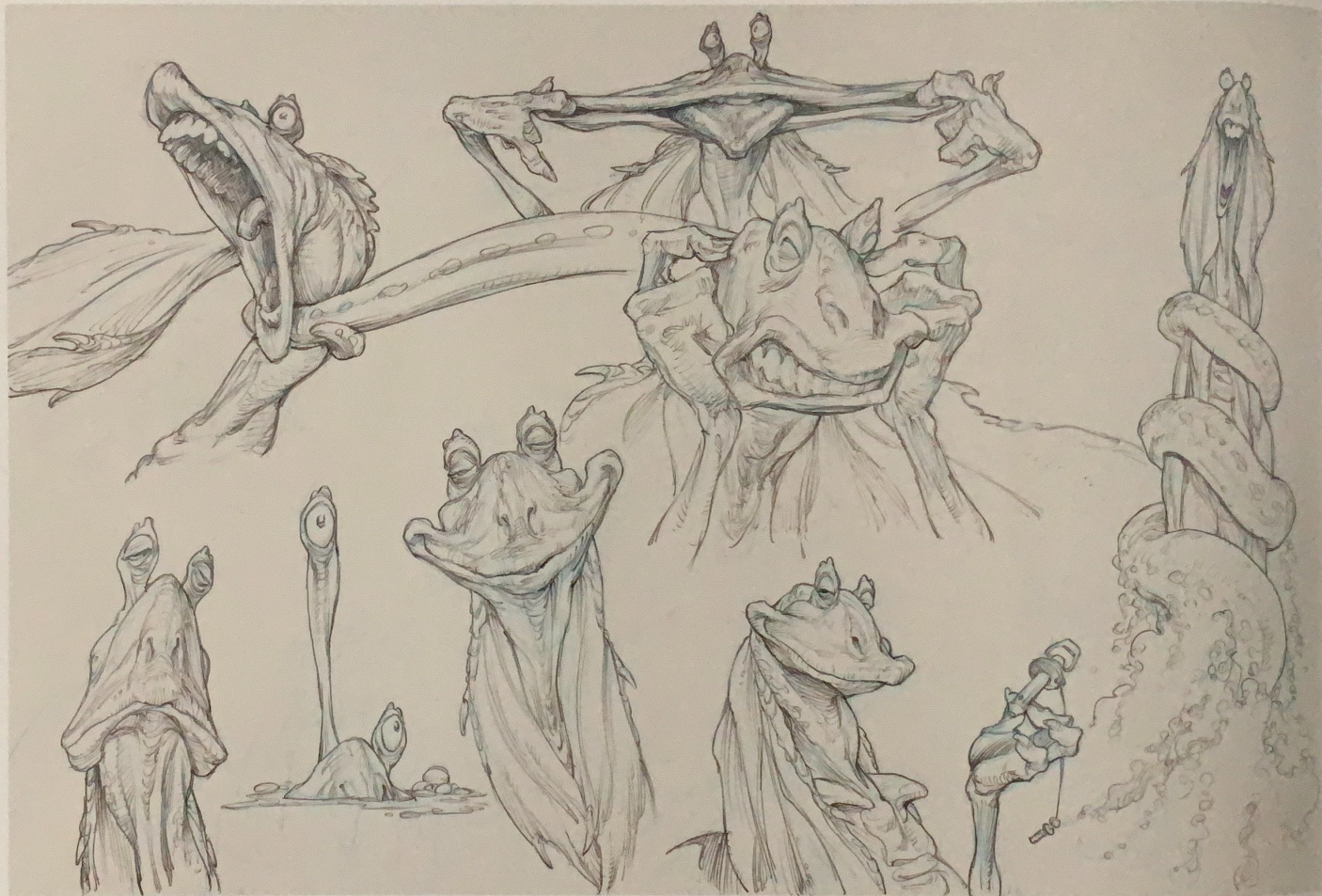
2.73 Terryf Whillatch's concept, from March 8, 1993, shows an early version of Padmé and Jar Jar Binks escaping from the "rubber barnon thugs" as their homeworld is attacked. Jar Jar's scale is significantly larger than Padmé's at this stage in development, and he ran also be viewed as her protector.







Terry Whittaker
JANUARY
7-19-95



“Jar Jar is a klutz who can’t do anything right. Although his heart is in the right place, he causes trouble and destroys everything he comes in contact with. A character like Jar Jar is like Threepio and Artoo—a comic foil. He’s a coward, but apart from that he’s fine.”

George Lucas

out about eight or nine years old. The kid is enthusiastic, good, and compassionate. Even though he wasn’t raised a Jedi, he has a lot of Jedi qualities about him. Even though he’s too old to start the training of a Jedi, Obi-Wan feels the Force is so strong with him that he has to train him as a Jedi. So, Anakin starts out very idealistic, very naïve, very clean of any dark side.

Why do the Jedi take the kids when they’re little? I have to come up with an answer even though it doesn’t show up in the script. There has to be logic behind why that happens. This is Anakin’s Achilles’ heel that ultimately comes into play when he grows up. He was too old to part from his mother. As a result, later he fell in love and he couldn’t bear to part from his wife when he found out she was going to die in childbirth. Therefore, when the devil came to say, “I can bring her back,” he fell for it, even though it was a lie.

Obi-Wan begins as this strong Jedi character but when you see all six movies you’ll see that what Ben is doing with Luke is

very close to the same mistake he made with Anakin. So there’s this underlying current that he’s going to make the same mistake again, that Luke’s going to turn into a Sith instead of having him redeem Darth Vader. That’s the big tension in this whole thing—can Obi-Wan right the wrong that he’s done?

Ultimately, this trilogy is about the relationship between Anakin and Padmé. She’s much more than a wife. It’s a complex, slightly dysfunctional relationship and it resolves itself in a similar way to how Ben resolved the issue of Anakin, which is that when one person dies something new is born. So when Anakin’s mother, who is a key player in all this, dies, something is born in Anakin that becomes Darth Vader. When Anakin is in the process of becoming Vader, Padmé finally lets go of him.

Paul Duncan And in the way that after Ben dies in *Star Wars*, it reaffirms Luke’s belief and trust in the Force.

George Lucas The core of Anakin’s problem is that Jedi are raised from birth so they learn to let go of everything. They’re trained

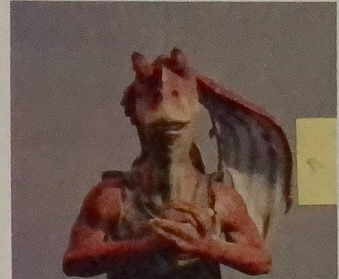


2.78 By September 1996, Jar Jar had evolved into a character much closer to the final design. John McLaughlin’s interpretation came complete with comic expressions and elastic features. Bob Coleman, Animation Director: “George described Jar Jar as not having any bones.”

2.79 A clay model of Jar Jar was sculpted and scanned, putting the character into the digital dimension.

2.80 Ahmed Best was cast as Jar Jar. Lucas recognised his abilities as both an actor and someone who had a great physical presence, who could create a character through movement. Ahmed Best: “I wore a motion capture suit covered in light sensors. As I moved, the light sensors moved, infrared cameras tracked the movement and input that data into a computer. That’s how they captured the movement in the computer.”

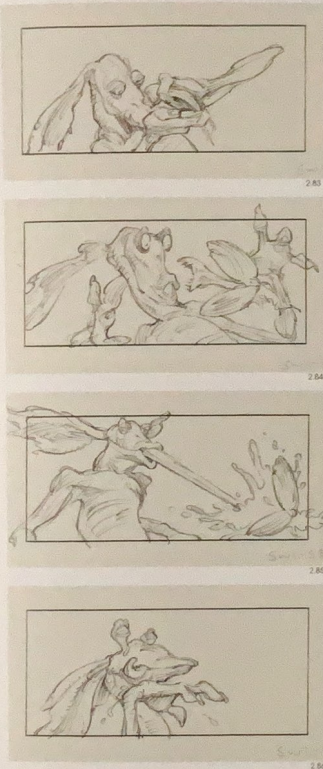
2.81 Jar Jar’s design was finalised and this computer-generated image was produced on January 14, 1999, to check the modeling. The arrow is pointing to a horn that has detached from his ear, indicating a rework is required.





“We tested a lot of people for the Jar Jar role because it was an exercise in movement. As with casting Anthony Daniels as C-3PO, if the dialogue doesn’t work I could always change it, but the physical movements and everything that are being done by Ahmed Best are forever.”

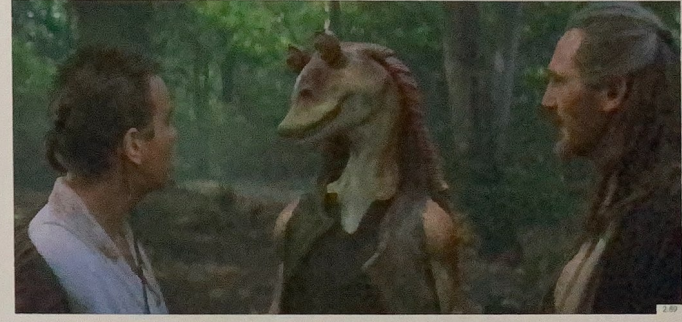
George Lucas

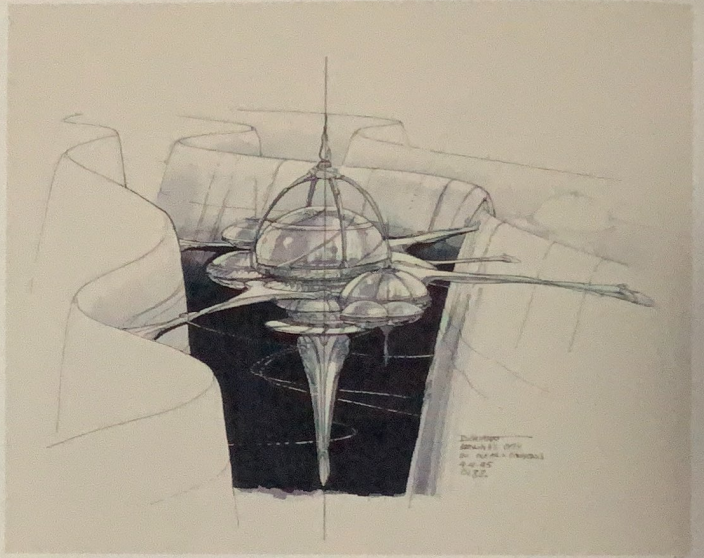
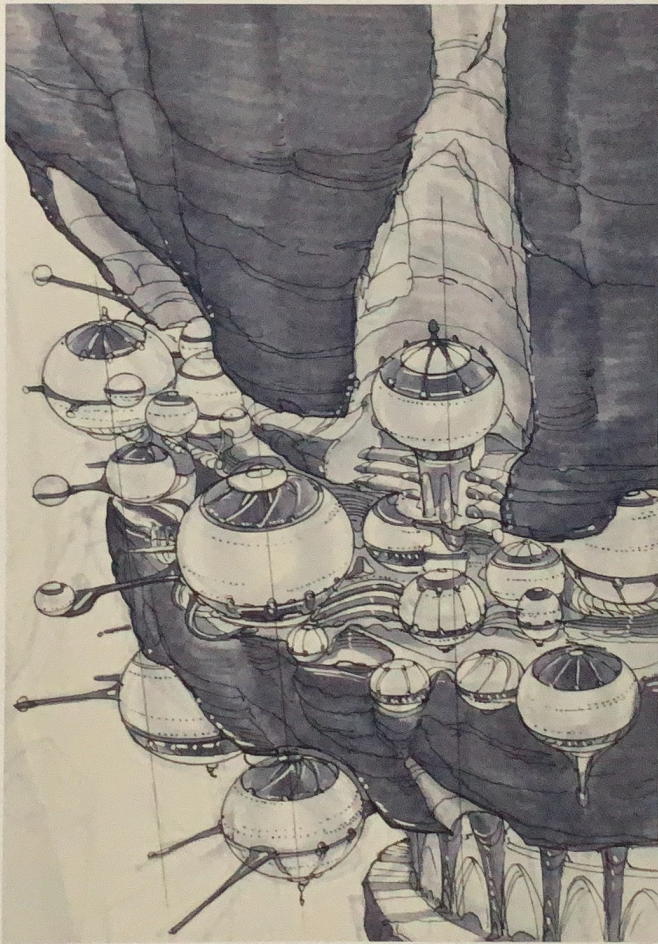


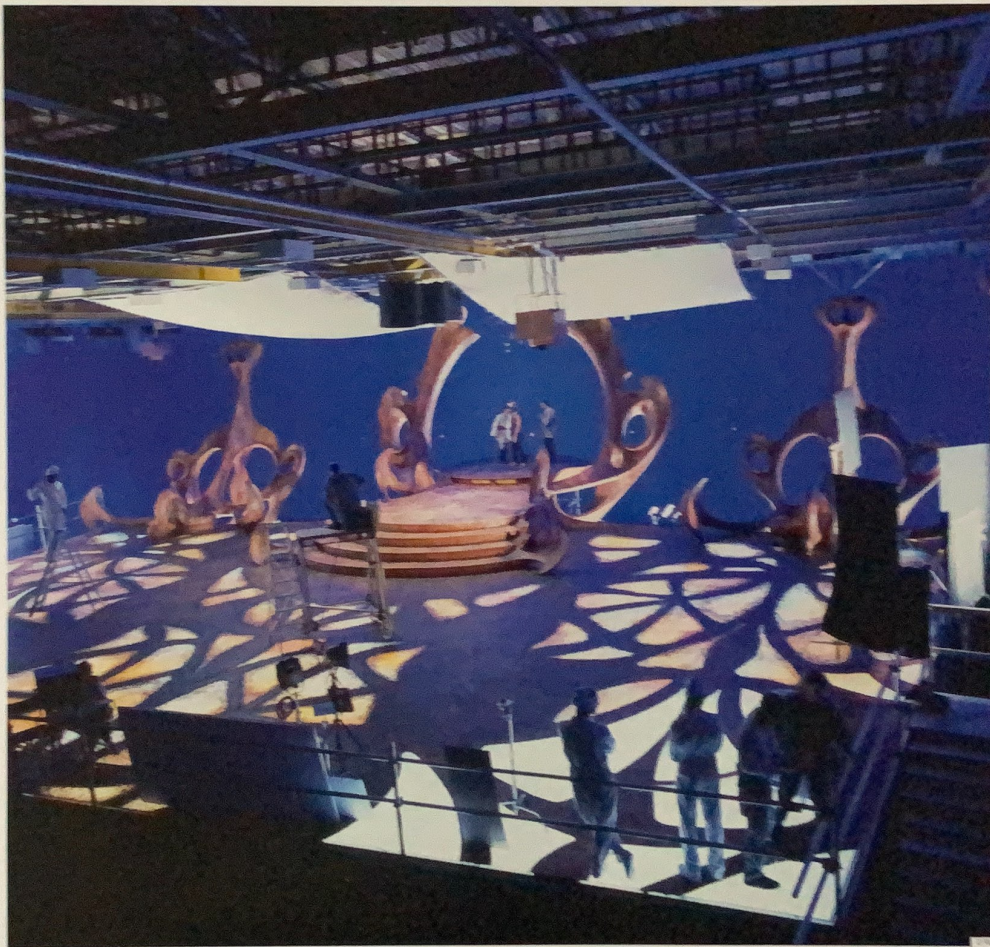
ADR Cue Sheet			
Master		Sheet 1 of 4 (REV)	
Take	Time	Dialogue	Notes
JAR JAR	01:10:10.00	MESA CALLED JAR JAR BRING MESA YOUR HUMBLE SERVANT	UNRECORDED: THESE WERE RECORDED IN THE ORIGINAL FILM. JAR JAR'S VOICE WAS RECORDED BY AHMED BEST.
QAI-GAN	01:10:10.00	THAT WON'T BE NECESSARY	UNRECORDED: THESE WERE RECORDED IN THE ORIGINAL FILM. QAI-GAN'S VOICE WAS RECORDED BY NICK DALLMAN.
JAR JAR	01:10:10.00	OH BOO! IT IS THE DEMONDED	UNRECORDED: THESE WERE RECORDED IN THE ORIGINAL FILM. JAR JAR'S VOICE WAS RECORDED BY AHMED BEST.
JAR JAR	01:10:10.00	BY OH QAI-GAN I HAVE DEBT IT IS OH NO! I AM SAL SAH! I AM SAL SAH! I AM SAL SAH!	UNRECORDED: THESE WERE RECORDED IN THE ORIGINAL FILM. JAR JAR'S VOICE WAS RECORDED BY AHMED BEST.
QAI-GAN	01:10:10.00	STAY DOWN!	UNRECORDED: THESE WERE RECORDED IN THE ORIGINAL FILM. QAI-GAN'S VOICE WAS RECORDED BY NICK DALLMAN.
JAR JAR	01:10:10.00	WHAT'S THIS?	UNRECORDED: THESE WERE RECORDED IN THE ORIGINAL FILM. JAR JAR'S VOICE WAS RECORDED BY AHMED BEST.
QAI-GAN	01:10:10.00	A LOCAL (EXHALES)...	UNRECORDED: THESE WERE RECORDED IN THE ORIGINAL FILM. QAI-GAN'S VOICE WAS RECORDED BY NICK DALLMAN.
JAR JAR	01:10:10.00	LET'S GET OUT OF HERE BEFORE MORE GROSS SHOW UP!	UNRECORDED: THESE WERE RECORDED IN THE ORIGINAL FILM. JAR JAR'S VOICE WAS RECORDED BY AHMED BEST.
QAI-GAN	01:10:10.00	IF THEY FIND US, THEY WILL CRUSH US...	UNRECORDED: THESE WERE RECORDED IN THE ORIGINAL FILM. QAI-GAN'S VOICE WAS RECORDED BY NICK DALLMAN.
JAR JAR	01:10:10.00	GRIND US INTO TINY PIECES AND BLAST US INTO OBLIVION	UNRECORDED: THESE WERE RECORDED IN THE ORIGINAL FILM. JAR JAR'S VOICE WAS RECORDED BY AHMED BEST.
QAI-GAN	01:10:10.00	HOW MUCH FURTHER IT?	UNRECORDED: THESE WERE RECORDED IN THE ORIGINAL FILM. QAI-GAN'S VOICE WAS RECORDED BY NICK DALLMAN.
JAR JAR	01:10:10.00	OH DON'T WORRY...	UNRECORDED: THESE WERE RECORDED IN THE ORIGINAL FILM. JAR JAR'S VOICE WAS RECORDED BY AHMED BEST.
JAR JAR	01:10:10.00	(BREATH AND THEN SCREAM)	UNRECORDED: THESE WERE RECORDED IN THE ORIGINAL FILM. JAR JAR'S VOICE WAS RECORDED BY AHMED BEST.



- 2.82 Ahmed Best and Liam Neeson filming the sequence where Jar Jar meets Qui-Gon. Nick Dallman, live-action Creature Effects Supervisor: “We life-cut Ahmed and produced a body suit that he wears. His arms move beautifully, and most of the time it’s just like body painting; it doesn’t even look like a suit. We changed his proportions fractionally. Each time we could use the clothes or arms in a shot it saved a chunk of money on CG animation and rendering.”
- 2.83–85 In Jar Jar’s scripted introduction to the movie, shown in John McCaig’s storyboards, he picks up a clam, the clam emerges from its shell to grab him, but his long tongue jumps out and he devours it. The idea was discarded in favor of Qui-Gon literally running into Jar Jar while fleeing the droid army invasion. However, Jar Jar’s ravenous appetite is a recurring joke throughout the movie.
- 2.87 The Automated Dialogue Replacement Cue Sheet, dated July 21, 1999, lists the recorded dialogue between Binks and Qui-Gon. George Lucas: “The language is a combination of a lot of different influences, like English dialects as well as pidgin English. Ahmed’s got a very good take on the dialogue because he played the scenes and became the character on set.”
- 2.88–89 On-set and final frame of Jar Jar thanking the Jedi for saving his life. Ewan McGregor: “One of the hard things is not looking at Ahmed’s eyes. They’ve put this dark screen over his helmet, but it’s still human instinct to look in his eyes instead of looking up at Jar Jar’s eyes on top.”

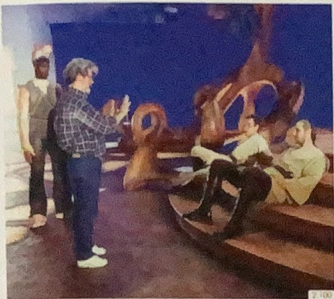




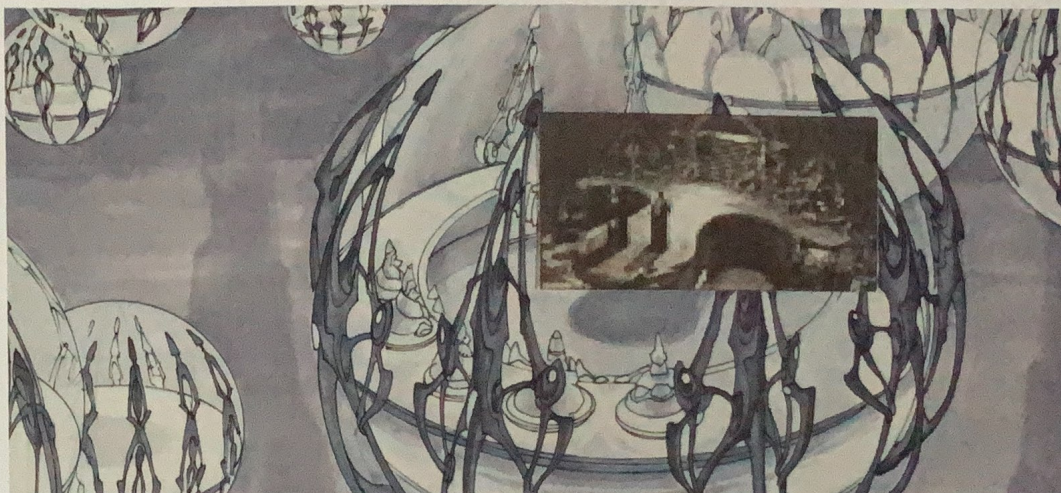


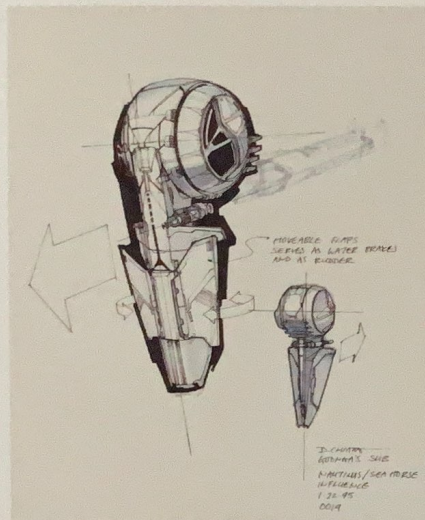
"Boss Nuss's physical presence is quite large; He's six feet tall and burly and is voiced by Brian Blessed. Blessed's physicality matched the character so much that it was a nice starting point for the animation."

Art: Thomas/Good Animation



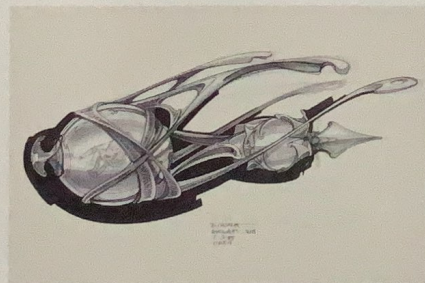
- 2:06 Set for the town square in Otah City where Jar Jar and the Jedi make their entrance. Note that it was lit from underneath.
- 2:07-08 John McVie's storyboards depicting the arrival of Obi-Wan and Jar Jar in Otah City. Originally the change in pressure between the water of the lake and air bubble resulted in Jar Jar becoming blinded. The bubbles are hydrostatic force fields that allow an atmosphere beneath the surface of the lake.
- 2:100 Best looks on as Neeson and McGregor sit on the steps of the town square set, concentrating on Lucas's direction. They are working in a predominantly blue-screen environment, where some visual elements have not yet been designed.
- 2:101 Doug Chiang's computer-generated test for the color, texture, and render for Boss Nass, the Gungan leader (April 2, 1999).
- 2:102 Karl Knafman's storyboard for shot 0C8R027: 010A (0C8 = Otah Gungan Boardroom. It is scene 27 and shot 10 of the scene.) The live-action shot was completed first, then the storyboard was made incorporating the live-action material. After approval, a bubble model was built, shot, and replicated within the scene during postproduction.
- 2:103 Final frame of the scene where the Jedi request assistance from Boss Nass.



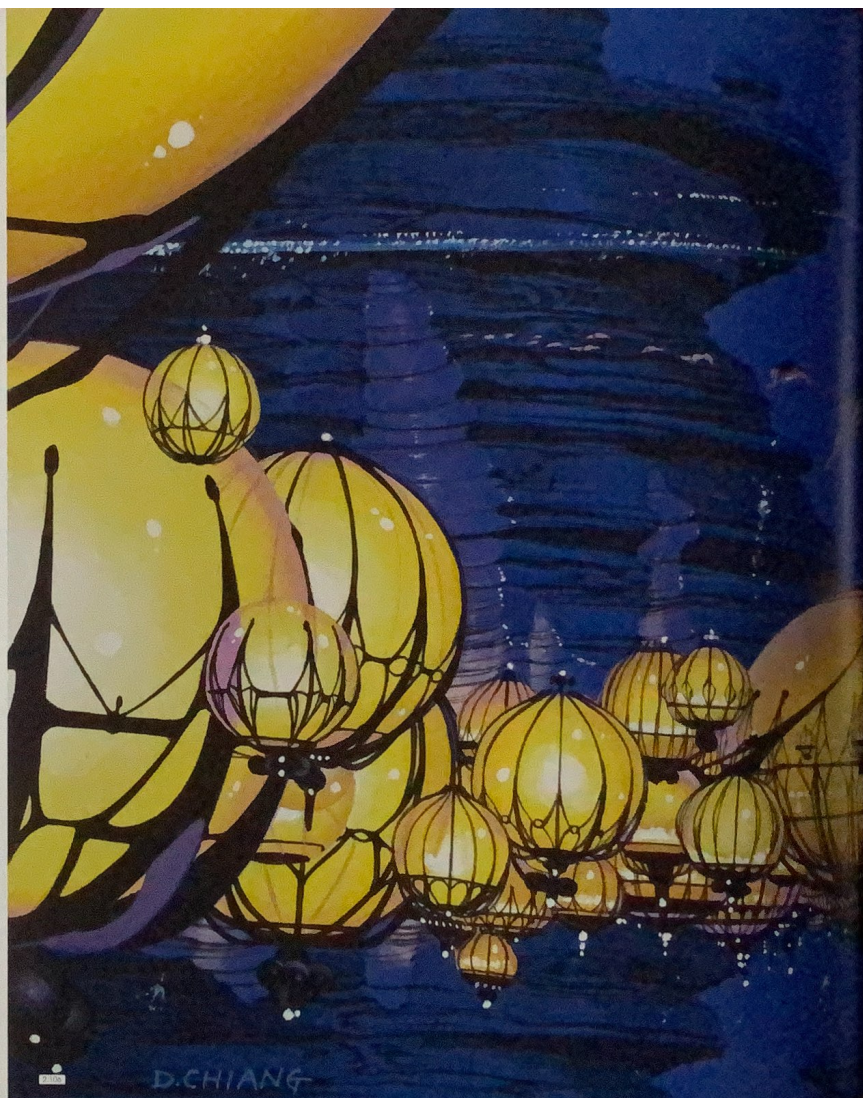


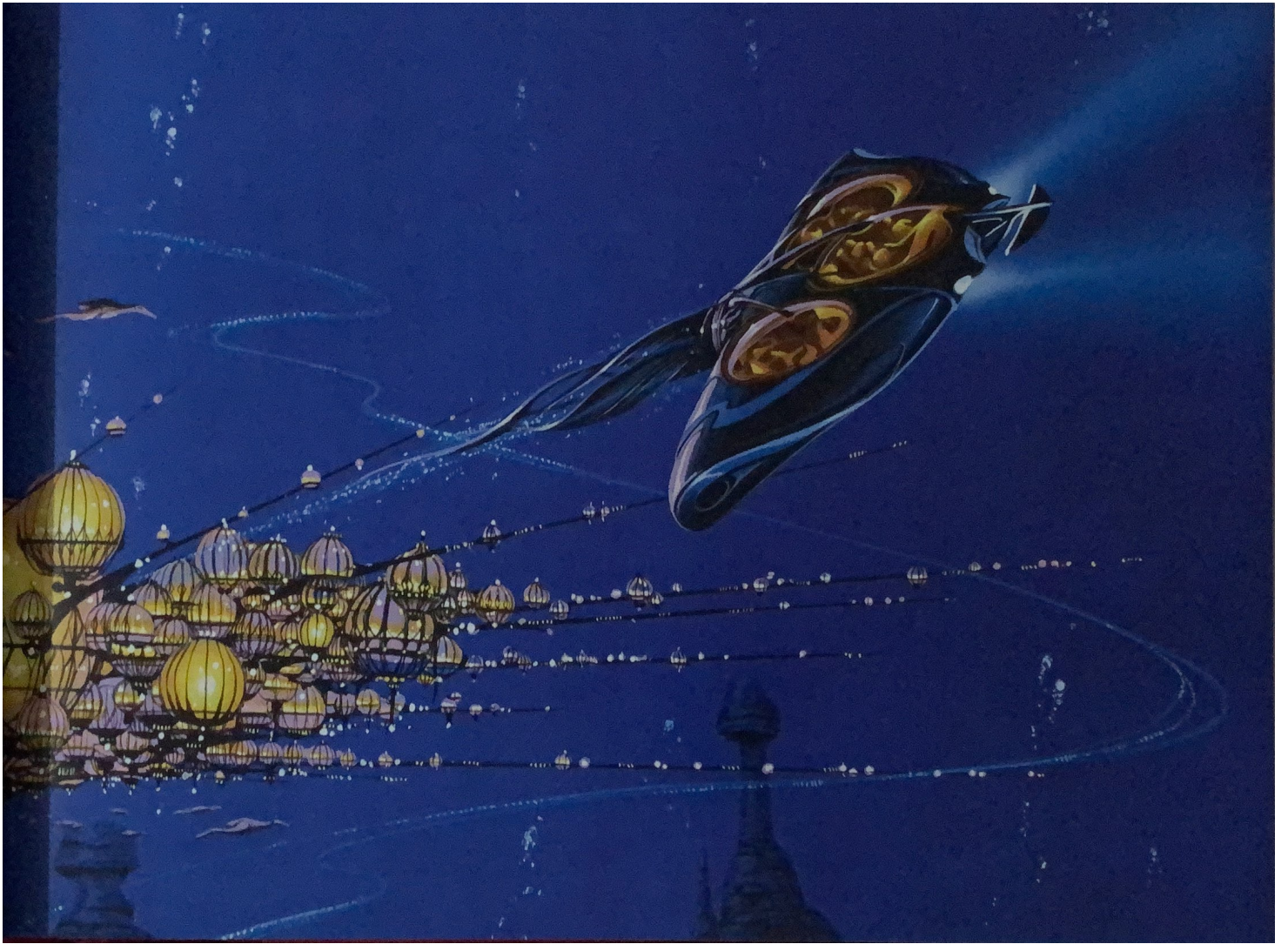
2.104

- 2.104 Dong Chiang often found inspiration for his designs in the natural world. The shape of a sea horse, as well as Captain Nemo's Nautilus, influenced this early submarine design (January 22, 1995).
- 2.105 Chiang's February 3, 1995, design is more fluid and is based on a squid. Note that there is only space for two occupants at this stage—these were designed for Qiu-Yan and Jui-Jui, before Qiu-Gui was developed as a character.
- 2.106 Dong Chiang's painting (December 4, 1996, 4.7 days) shows the final mantle-ray shape of the biogeo submarine as it leaves on its journey through the center of the planet to Three.



2.106







"There's always a bigger fish."

Qui-Gon Jinn

Doug Chiang George kept saying, "No, no, no. Do these three things." It was baffling, because we couldn't figure it out. In the end I did exactly what he said, and pieced it together. I remember drawing it and thinking, "This is not going to work." When I drew it, it was like, "Wow, it actually worked."

Paul Duncan So this is drawing 627, dated April 17, 1996?

Doug Chiang Yeah. That was Watto. There was this whimsy about it that makes it Star Wars fun. That is George. He had a clarity of vision from the start. If he had the time I'm sure he would draw this himself.

Paul Duncan Watto feels like one of those malevolent characters in a Disney film like Pinocchio. He is a slave master, the owner of Anakin and Shmi, but he doesn't beat them. He allows Anakin to do things. There's a push-out of emotions going on that's not clichéd.

Doug Chiang Exactly. There're layers and depth to his character. You see that when he loses the belt to Qui-Gon. Those are the things that George is thinking about when he tells us about the design.

When we're drawing, George's casting. So we're trying to capture a very specific character type that he's looking for. He's looking for personality. He's looking for things that will reinforce what he's writing.

After this, I had a huge appreciation for George. As young designers you think, "I trained my whole career. I know what I'm going to sell you on the idea." You know what? George is operating on a different level to us.

April 23, 1996

George Lucas In the writing process, I'm very focused on story. When you're doing storyboards, you're more interested in the cinematic kinetics of things, of how things move together.

George Lucas held a three-hour storyboard meeting every Tuesday with production designer Gavin Bocquet, David Desautels,





and the art department led by Doug Chiang. On April 23, 1996, Lucas outlined the sequences he needed:

GWL STORYBOARD MEETING NOTES/April 23, 1996

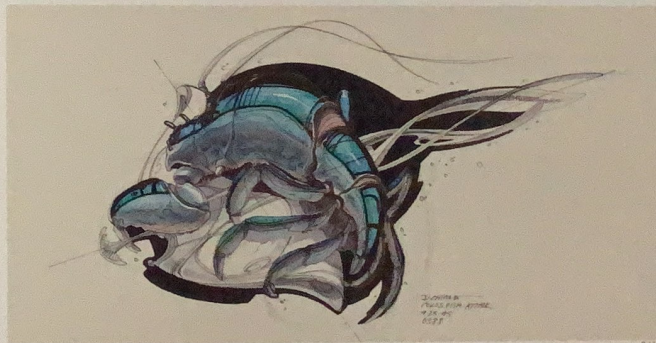
1. Opening
2. Bridge and conference room
3. Battle outside conference room
4. Battle outside bridge
5. Landing craft and chase
6. Underwater sequence—swimming to Otoh Gunga
7. Otoh Gunga landing platform
8. Space battle—going past blockade (into hyperspace, back out onto Tatooine)
9. Pod race
10. Jedi/Sith fight (huge) on Tatooine (like Jackie Chan film)
11. Leaving Tatooine (into hyperspace)
12. Arriving at Coruscant (ship in, city shots & la Cloud City)
13. And following—the rest back to Naboo (more details later)

2.101 On their journey, Qui-Gon, Obi-Wan, and Jar Jar are attacked by an opee sea killer, which in turn is captured by a giant sanda aqua monster, thus forcing the release of the submarine. Terry Whillatch's concept art (October 19, 1995) shows the relative scale between the submarine and the aquatic monster.

2.102 In this September 27, 1995, concept/sequence, the submarine is caught by a shrimp-like "culo fish," which is snatched by a "hatchet fish" (later called the opee sea killer). Subsequently, the opee sea killer and sanda aqua monster were used in the film. In all her concepts, Whillatch took time to add other fauna and flora details in case George liked them, like the audience sees creatures at left.

2.103 Doug Chiang's painting of the opee sea killer in pursuit (January 24, 1996, 4 days) earned a "Fabulous" stamp from George Lucas.

2.110 An early culo fish concept by Doug Chiang (September 25, 1995).



“The queen’s costume designs are a little more outlandish. We looked all over Mongolia, Tibet, and anywhere to find inspiration for her costumes.”

Iain McCaig / Concept Artist



Lucas then described specific shots for the underwater sequence as Obi-Wan and Jar Jar swim to Otoh Gunga, stipulating that “all shots underwater are moving shots—camera floats with them.” The descriptions of widescreen, point of view, close-up, reverse

shots are very specific as Obi-Wan and Jar Jar enter the underwater city, take the submarine, are followed by the opee sea killer, which is devoured by the sando aqua monster, go through the center of the planet, are chased by a colo claw fish, which is

eaten by another sando monster, and then arrive at the Theed estuary. Iain McCaig drew these storyboards.

Each meeting followed a similar format, with Lucas commenting on past work, and adding new sequences. On August 20, Lucas described new battle ideas, which would be drawn by Ed Natividad, and commented on the Jedi/Sith fight on Tatooine.

Iain McCaig / Concept Artist I had done a sequence where the Sith Lord comes racing up on his speeder. Obi-Wan Kenobi turns round as the Sith Lord jumps off his bike, throws his cloak off, draws his lightsaber and attacks Obi-Wan before the cloak even hits the ground. I storyboarded this and tried to make it look really fast. I used all the tricks I had and when it was up on the wall, George asked, “What are you trying to do?” “To look really fast,” George said. “Fast. Want to see fast?” and then he took three of the boards and he rearranged them. He didn’t remove any of them and it was 10 times faster. I thought I had that scene locked down, and I learned there’s always a better way, even in areas you think you know real well.

George Lucas The work part is not hard. It’s really the relentlessness of the amount of it that you have to do that’s hard. It’s one thing to storyboard 100 shots and it’s another thing to storyboard 2,000–3,000 shots. We’ve been going on for several months now and it’s going to go on for another year.

June 22, 1996

George Lucas I finished the rough draft and the revised rough draft and now I’m starting on the first draft. I’ve got a lot more to go.

In the very rough draft, Obi-Wan was essentially by himself through the first third of the film. In the first 10 pages or so there was nobody for him to play against. Then Jar Jar Binks appears, but he’s comic relief. The queen operates in a different world than the Jedi. I have to develop a relationship between her



2.111 Jay Shuster’s storyboard (October 31, 1997) suggests the invasion of Yubao as a panning shot from left to right following the advances of the droid army towards Theed.

2.112 Final frame of the march on Theed.

2.113 Doug Chiang’s design for the Velumidian shuttle (April 23, 1998). A scene of the shuttle landing, with Nute Gunray and Bane Husha disembarking, was filmed and included in early edits of the movie, but only the last part of the scene survived in the final cut.

2.114–115 Ed Natividad storyboarded the invasion of Theed as a war story with frightening depictions of death, as well as children covering in a window.

2.116 A troubled Queen Amidala observes the invasion from the palace. Closer scrutiny of the wall behind the queen reveals the wiring used to power the lights at the bottom of her dress. The wiring was digitally removed.



2-13

and Anakin, because that's where the real story is, but I wasn't able to develop Obi-Wan's character fast enough.

When I got through the rough draft I realized that I had a second Jedi that comes in about halfway through the script who is an interesting character and the more I thought about it the more I thought of things I could do with these two Jedi together because one alone didn't have much to react to.

Paul Duncan So you added a Jedi mentor for Obi-Wan, called Qui-Gon Jinn, which meant that Obi-Wan became a Padawan. The film begins with them dealing with a dispute between the Trade Federation and Naboo.

George Lucas The film starts with corrupt corporations doing things behind people's backs. The Jedi are trying to solve the mystery. A corporation is a shark without a conscience. All it cares about is eating. It's not responsible. It's the stockholders' fault, or the CEO's fault, or the board's fault. It's always somebody else's fault, but of course the golden rule is "make money, no matter what," so that's what everybody follows. They're not doing it to be nice to people.

Our central characters—Qui-Gon, Obi-Wan, Padmé, and Anakin—are all trying to do the right thing, but they're

completely overwhelmed by forces that are way bigger than they are. The Jedi Council and bureaucrats in the Senate are the inactive forces working against them, while unbeknownst to them the active one is Palpatine.

The second film is about the building of a secret army and going to war, which obviously turns the grand chancellor into an Emperor politically. The Senate gives up the Republic. It's still a Republic, but an Emperor rules it. Don't worry, as soon as things are fixed, he'll give it back. (Laughs)

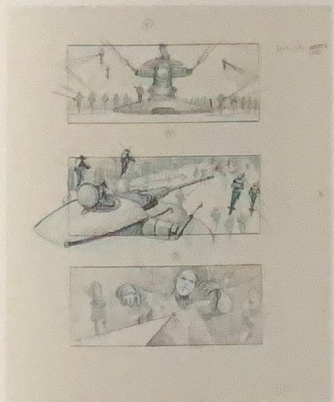
The two main themes are "How do you become a bad person?" and "How do you give away a democracy to end up with a tyrant?" Because they give it away—there's no coup, there's no rebellion, there's no nothing.

Paul Duncan They vote it in.

George Lucas They vote it in, which is what happens in real life.

Paul Duncan The three movies are the endgame for the Emperor.

George Lucas The whole thing's been set up for a long, long time. He is just watching the dominoes fall.



2-14



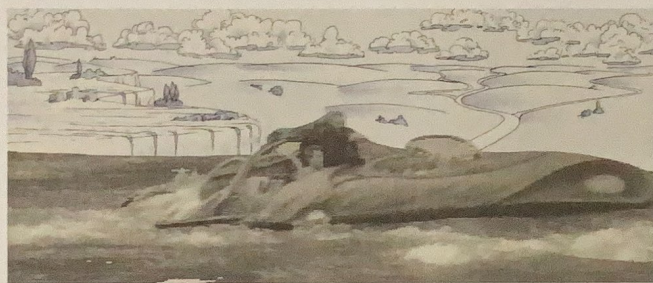
2-15



2-16

"If you can make anything you want, why would you make Star Wars? Because I think it has some social value and it's fun to do. I love making movies. I don't mind the fact that people don't think of them as intellectually stimulating, because they're not meant to be perceived that way."

George Lucas



2.117



2.118

September 1996

George Lucas I was trying to get a studio facility built here, near the Ranch, so I could shoot here, but that did not happen. But hey, they win. I lose, I'm going to England.

Rick McCallum / Producer We needed an area five or six times the size of Elstree Studios, so we rented Leavesden, a former aerodrome located on the outskirts of London, for two and a half years.

David Tattersall / Cinematographer The advantage for Rick and George was that they could lease the entire facility; they didn't have to share anything with other productions, which is the usual situation. Because of that, many sets could be built once, and left standing indefinitely. Our production designer, Gavin Bocquet, had about 15 large spaces to work with, which gave us the room to have some 25 fully constructed sets to shoot on.

Rick McCallum We've totally destroyed the barrier between production and postproduction. It means that George can direct the movie, we can keep our sets up, we have total security, we can edit for eight or 10 weeks, rewrite, then we can reshoot. We built this into the budget and the contracts with the cast and crew.

Preproduction commenced in September 1996.

Rick McCallum We have about 500 people working full time, but most of that is construction. It will slip off and then we will have

a shooting crew of about 80 people. But we will be building sets throughout the whole time.

Rob Coleman / Animation Director Instead of building these huge, enormous sets as Cecil B. DeMille would have done building the Colosseum in Rome, for example, you build a little bit of the Colosseum with a lot of blue screen around it, and you put your actors in front of that. You save money and put it into digital or miniature backgrounds, then composite things together.

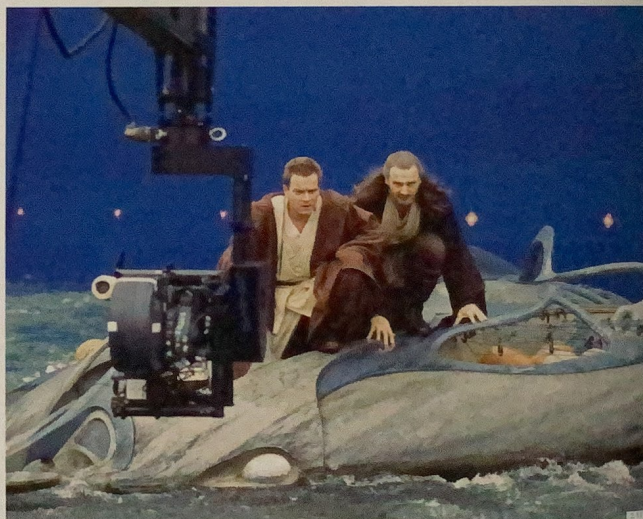
Rick McCallum I'd planned to build only up to six feet, just enough to get the actors shot against the backgrounds. Then we cast Liam Neeson, who's 6'4", as Qui-Gon, so we had to raise that minimum height. He ruined my budget.

2.117 **Kurt Knafman's storyboard** (March 13, 1995) for the bongo arriving in Theed—note that the live-action plate had already been filmed. In the script the submarine emerges into an estuary but the current pushes it toward a waterfall.

2.118 **Iain McNeil's storyboard** depicts the submarine about to fall over the waterfall. Qui-Gon shoots a cable that attaches itself to a railing onshore giving the Jedi and Jar Jar time to escape.

2.119 **Filming McGregor and Newsom** preparing to escape from the bongo sub. The background is blue screen to enable CG environments to be added during postproduction.

2.120 **The Theed estuary scene** was shot with the actors at Pinewood Studios on September 23, 1995, and then pickups were filmed with stunt doubles on March 2 and 4, 1999. The waterfall sequence was cut before the release of the film, although it was included as a deleted scene on home video.



2.121



"The live-action sets were built one-story tall, so we had to add all of the rest of the architecture. Otherwise, Physical miniatures were made for the Theed shots due to the complex nature of the architecture and the need to provide floral augmentation. These were built to 1:30 scale and filmed outdoors to match the original live-action lighting. Filming was done at 64 FPS, to minimize the effect of wind on the miniature trees, using motion control photography, to match the original camera motion."

Scott Squires / Visual Effects Supervisor



September 7, 1996

George Lucas Ideas don't come into a story that easily. A lot of the time the characters have to say what you mean, and to do that the characters usually have to have differing opinions about the idea so they can discuss it.

Qui-Gon and Obi-Wan disagree about using what one would call in mythological terms "the guide." One believes in the guide. The other one doesn't. When you are walking down the street and the beggar's on the street, one character takes the beggar along with them on the trip, and the other one says, "Why are you doing that? This is going to slow us down. This is not a wise thing to do." The first one says, "Yes, but this beggar is useful to us." It's a classic mythological motif but at the same time, it's a conflict.

The characters have to grow so what happens is that eventually the character that is very much against doing this has the obligation transferred to them.

In this case, we have Qui-Gon, the mentor who takes on Anakin, and the Padawan Obi-Wan who thinks this is a bad idea, so we've got a dynamic between these two Jedi. At the end of the film, Obi-Wan takes on the obligation to train Anakin, one that he can't really fulfill because it's over his head.

His inability to train this kid properly turns Anakin into Darth Vader and drives the rest of the stories. Not only does he let his mentor down, but it plays into the ecology of the Republic. This is why he feels obligated to try to rectify the situation with Luke.

One of the reasons people connect to Star Wars is much is because the psychology of it is very old. Whether it's knights in armor, or Greek warriors, or Western gunfighters, you're always telling the same story where you combine the larger cosmic and spiritual issues with the temporal issues of who you are and what your limitations are. I'm amazed people aren't telling these stories anymore. People have forgotten about the reason you tell a story, they just seem to tell it without any point to it.

October 26, 1996

George Lucas Digital characters have been done before, in Jurassic Park, Jurassic, and Casper, but taking digital characters who are part of the scene and on screen for a long time is a huge challenge.

Jar Jar is the key character but we have about a dozen synthetic characters that will be in the movie. There's a lot of material to make, therefore we have to come up with an innovative way to put the costs so that we can do as much of it as we plan to do. The current motion capture technology isn't suitable because you have to capture each actor on their own on a special stage then put them into the image later. We need a character that everybody can interact with, so we're trying to figure out how to do that. We want to film an actor on the set, harvest the movement data, then feed the data into software so that the character will be automatically animated, and the actor digitally overprinted. Then we put the detail on and tweak it.

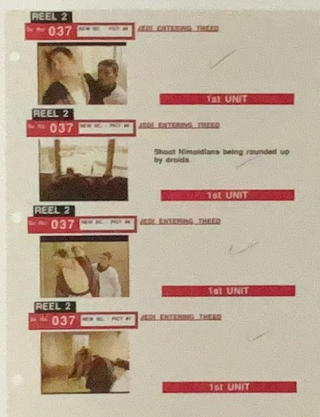
We've come to the conclusion that Jar Jar's face is too complex to try to get a human face to mimic it, so we will have the actor do their part, watch the lip movement for the end of the words, and the animator will animate that from scratch.

This week we've been testing with Mike Courteney to figure out how Jar Jar would walk, basically tests that he might have. Things that would make him look different when he's the animated character. I want him to have a very distinct look and a very distinct movement pattern, so we've been experimenting with various possibilities in that area.

A lot of the movement things though were simply the acting. "Swing your arms around, make your arms really loose, walk the way you walk that way, move your head, move your neck, and move your hips, try to put all those things together," and then say, "Let's make it more relaxed." To try to come up with something that looks right.

Going through the language with Mike was the first time I've heard it so I was able to listen to it objectively. It tends to sound a





- 2:121 Qui-Gon and Obi-Wan (here played by stunt doubles) leap from the walkway above the Theed plaza to confront the battle droids. Originally the Jedi fought battle droids at the entrance, walked up to the battle droids escorting the captive queen and her entourage, and then freed them.
- 2:122 Ewan McGregor business from a trumpet to play the battle droids, depicted by members of the crew wearing white suits and droid masks for reference. Ray Park, crouching next to the camera, observes proceedings.
- 2:123 Final frame of the queen and her entourage being marched through the plaza by battle droids.
- 2:124 These photo storyboards for the August 11, 1995, reshoot show the Jedi entering Theed just before they jump from the walkway.
- 2:125 Obi-Wan and Qui-Gon dispatch the droids and introduce themselves to the queen, telling her that the negotiations she had relied upon have failed.

little bit like an Indian accent, so I have to keep playing around with the words until I come up with a consistent seamless foreign dialogue that is not derivative of any particular current culture. And it still needs to be understandable, because I don't want to have to subtitle it.

November 16, 1996

George Lucas I'm pretty close to finishing my second draft, which is officially called the first draft, which is in reality the 25th draft. I'm up to page 100. I've run into the stumbling block of too much script and I'm trying to figure a way of expediting story so that we can get from point A to point B faster. In essence, I've run out of room.

I don't have extraneous scenes. In theory I could cut out an action sequence with Obi-Wan and Jar Jar with a sea monster, but it's a pretty good scene and I need something to intercut with the approaching Federation army.

The podrace serves the purpose of establishing Anakin's character, his prowess as a pilot, and his extraordinary abilities with the Force. So there's a lot going on in the podrace besides just an action sequence. It's about 20 minutes now and I'm trying to get it down to about 10 or 12 minutes.

The biggest structural problem is the third act. In *Star Wars*, they flee the Death Star, go to the Rebel base, have two scenes, and then there's the end battle. In this one they go from Tatooine to Coruscant, Coruscant back to Naboo, make lots of plans, and set up for the battle. Then they have the battle and the film ends. I've got about 15 or 20 scenes where *Star Wars* is only two, and if each of those is two minutes, that's 30 minutes right there. I have to get that down to about five or six minutes. I'm simplifying and trying to make the story cleaner and faster so I can get to the end.

This is the first really official script that everybody will have which means that it will be harder to change things after this point. This one becomes real.

I have ideal characters in my head, but when I finally get to the actors, they're going to be real people with their own personalities, and they're not going to necessarily be exactly what I had in mind. They're going to be something else, but I have to accept the fact that that's how the character. It begins to drive the movie in directions that I don't anticipate.

Robin Gurland / Casting Director It's always about who's right for the role. If it was someone the public knew, fine. If it wasn't, that was just as well. We never showed them the script, which surprised most of them. They would just come in and chat with George, Rick, and myself about anything and everything—politics, religion, theater. In fact, we talked about everything except *Star Wars*. George was looking to find out who the person was and how he or she matched the vision he had of a particular character.

George Lucas We cast our very first person. We're trying to make a deal now so hopefully that will happen and fall into







synthetic set? What are the real props and what are the synthetic props? A lot has to do with how much the actors come in contact with it, how much it costs to build in either environment. If a car is built for real then you might as well use it again and again. You don't want to have to build it twice, a real one and a synthetic one.

John Knoll My reaction to just about every board was "That's going to be really hard." And before you have time to think he's on to the next one. "There's 2,000 characters in that shot!" So it was a pretty overwhelming experience.

Rick McCallum It became clear this is going to be unlike any other special effects movie ever done. To put it into perspective, a big film has maybe 250 effects shots, and a monster film like *Titanic* has 450 to 500. George was thinking about somewhere between 1,700 and 2,000 shots. The thing that I was most afraid of was not "Can ILM do it?" but "Could any effects house do it?"

2.126 Preparing the model of *Threed* for shooting. It was filmed outside to make best use of natural light.

2.127 The queen reluctantly decides to leave Naboo to plead for help from the Senate on Coruscant. This final frame of the royal starship leaving the *Threed* hangar shows the integration of the *Threed* model with the G-4 starship and background environment.

2.128 George Lucas demonstrates how to attack a battle droid with a lightsaber.

2.129 Filming Ewan McGregor attacking a droid marquette in the *Threed* hangar. The lightsaber is made from aluminum and the glowing light of the laser was added during post-production.

2.130 Final frame showing Qui-Gon's skill with the lightsaber as he dispatches the droids.

place. But we've cast Natalie Portman to be Padmé, which is going to be great. She's perfect for the part. It's hard in those types of situations to find a young girl who has a lot of presence and a lot of strength who can play what is in essence an adult role. She has to play the queen, who is very aloof and distant and wears a lot of makeup and has rather extreme costumes. And then she has to play Padmé, who is much more personable, much more human.

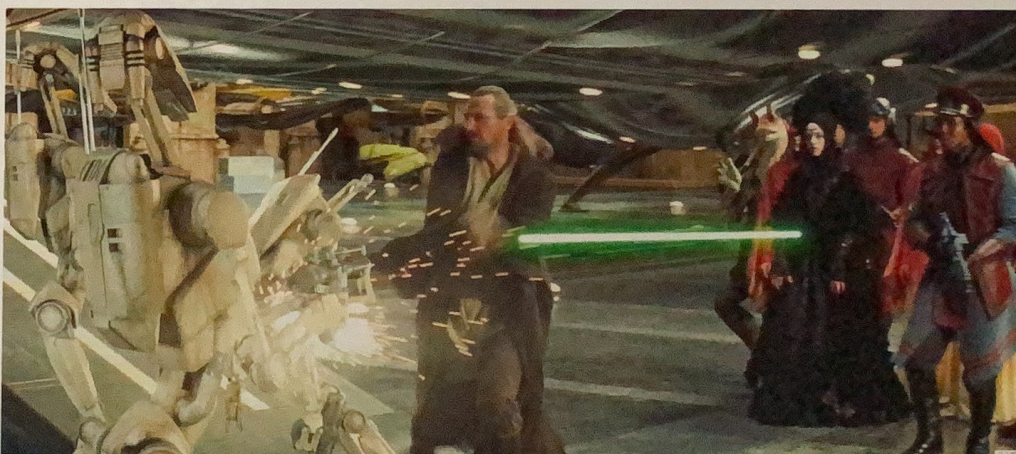
We have a couple of possibilities for each of the other major roles. The most difficult one obviously is the boy Anakin.

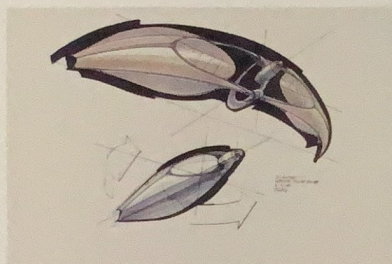
January 15, 1997

On January 15, a list of storyboards was made of all the sequences, which totaled 2,018 shots, with some sequences still under development. Lucas held a storyboard/set design meeting at Skywalker Ranch with the production team and the team from ILM.

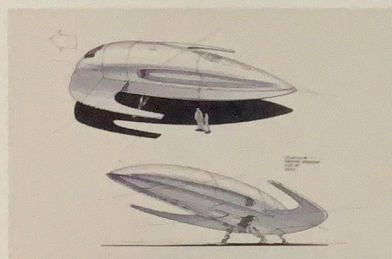
John Knoll/Visual Effects Supervisor We saw all the storyboards posted up on sheets of foam core, and George took us through the boards one by one.

George Lucas I broke it down in terms of what parts of the image are going to be real and what parts are not real. Most movies you build a set and shoot it. We can't do that. Here we have to know who are the real characters, and who are the synthetic characters? What is the real set and what is the

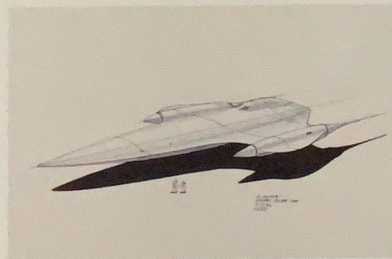




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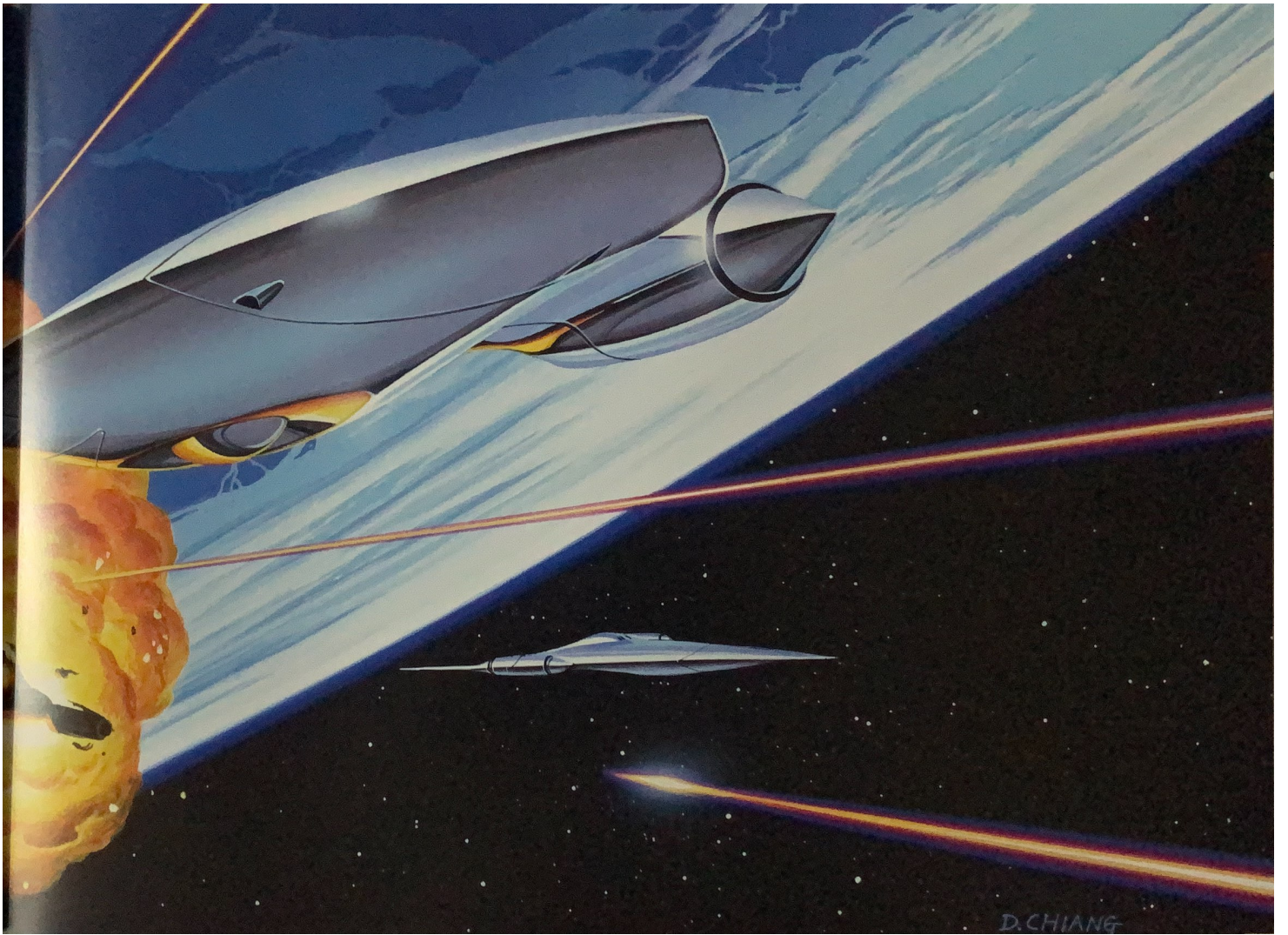


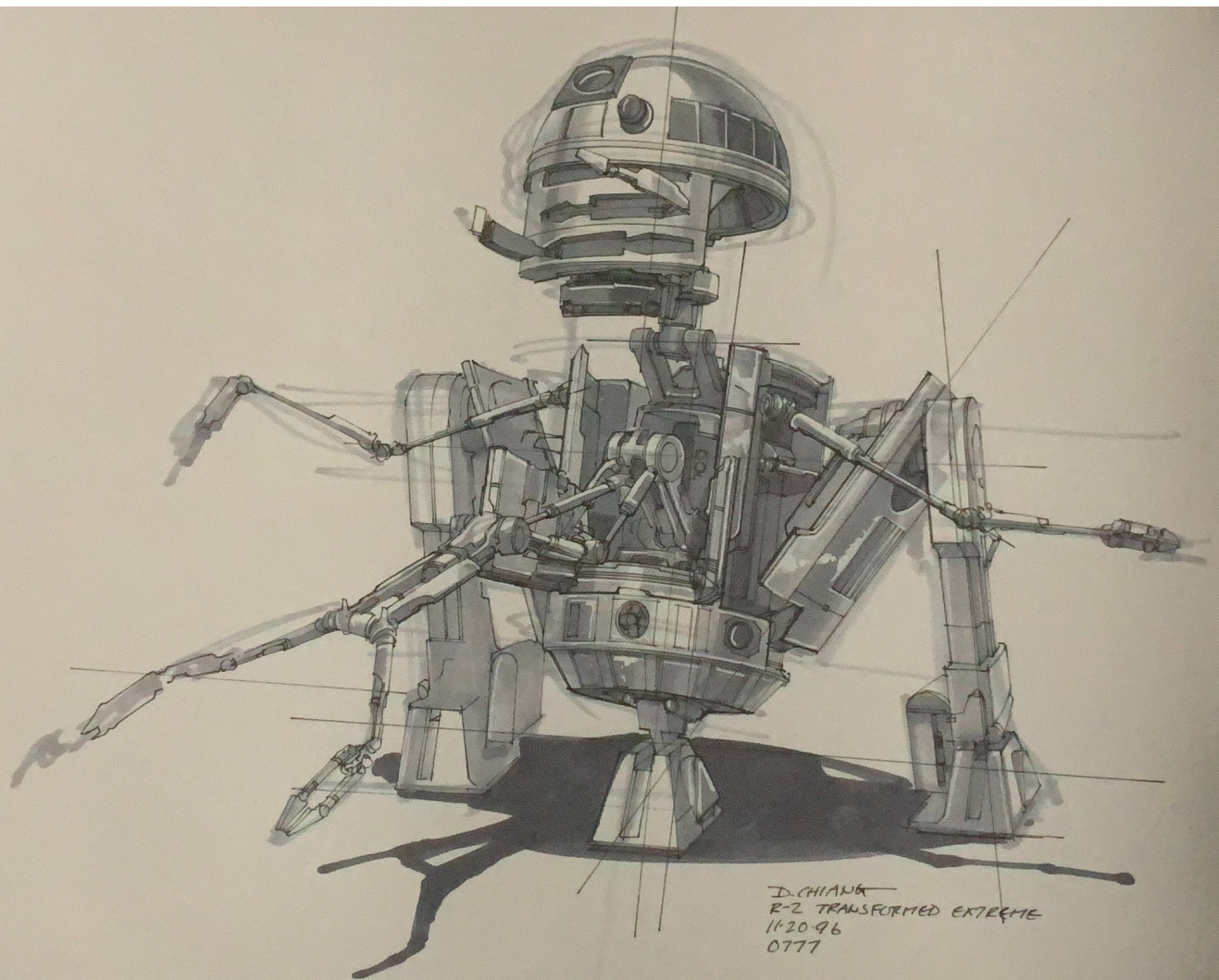
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- 2.131 Doug Chiang had many ideas for the queen's starship, including this version with a solar sail (June 2, 1995). It did not make it into this film, but the idea would be resurrected and used in Episode II: Attack of the Clones.
- 2.132 This version, dated November 20, 1995, looks like a tribble.
- 2.133 The final design for the queen's starship, dated May 13, 1996.
- 2.134 Chiang's painting showing the queen's spaceship, and others, trying to unlock the Trade Federation's blockade (August 7, 1996, 2 days).



2.134





“When we came up with the very elegant look of Naboo, using Art Nouveau form language to design handcrafted spaceships and vehicles, it was completely different from the original trilogy. I like that surprise, and George loves those surprises. I think that was the most rewarding part for me; creating something new that was going to then explain everything that you had seen.”

Doug Chiang

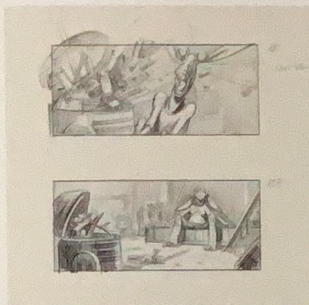
June 6, 1997

George Lucas I needed somebody who could serve as the center of the picture, the way Alec Guinness did in *Star Wars*; somebody who was very soulful and wise and powerful physically.

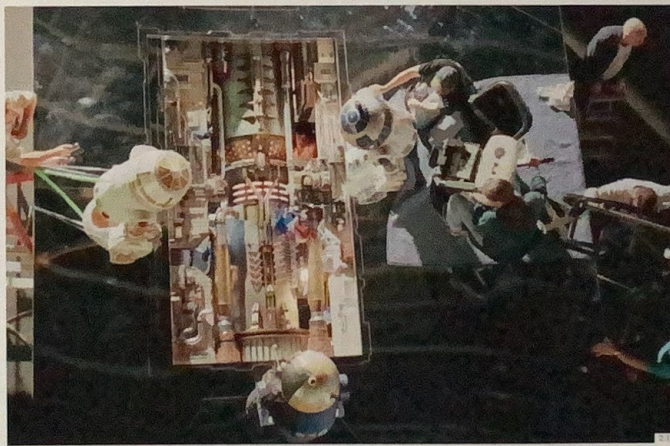
Liam Neeson I met George and Rick in London and we talked about kids. George is a family man, and I have two little boys, and that's what we talked about. Rick called me up and said “The character was originally a 60-year-old, would you be prepared to play 55?” I said, “Sure, I’m an actor.” But I thought, I’m not going to do old-man acting, because that would be stupid—this guy has to have a lot of lightsaber fights.

George Lucas I decided on Liam because I didn’t want somebody that looked like a movie star—I wanted somebody that looked like a very strong Jedi.

Rick McCallum For a younger Obi-Wan, we took a bunch of Alec Guinness films from when he was younger and looked



- 2.136 R2-D2's first appearance is in the queen's starship. Doug Chiang created concepts for the popular little astromech droid, based on it being like an unfolding Swiss Army knife (November 20, 1996).
- 2.136 Ed Natividad's storyboard for Jar Jar's first encounter with an R2 unit in the hold of the queen's ship. Jar Jar mistakes the droid for a trash can and the droid is not amused.
- 2.137 Ahmed Best filmed Jar Jar's first encounter with an R2 unit but the scene was not used.
- 2.138 Filming the exterior of the queen's ship as multiple droids try to repair it.
- 2.139 The queen's ship has been damaged by the blockade—its shield generator has failed and power is down. A brave little blue droid goes through an airlock to the exterior of the ship to restore power to the stricken vessel.



at current actors. We thought Ewan McGregor was great playing roles in *Trainspotting* and *Emma* the same year. Once we met him we knew.

George Lucas The first thing he said when he came in for the interview was “You’ve got to give me this because my uncle, Denis Lawson played Wedge.”

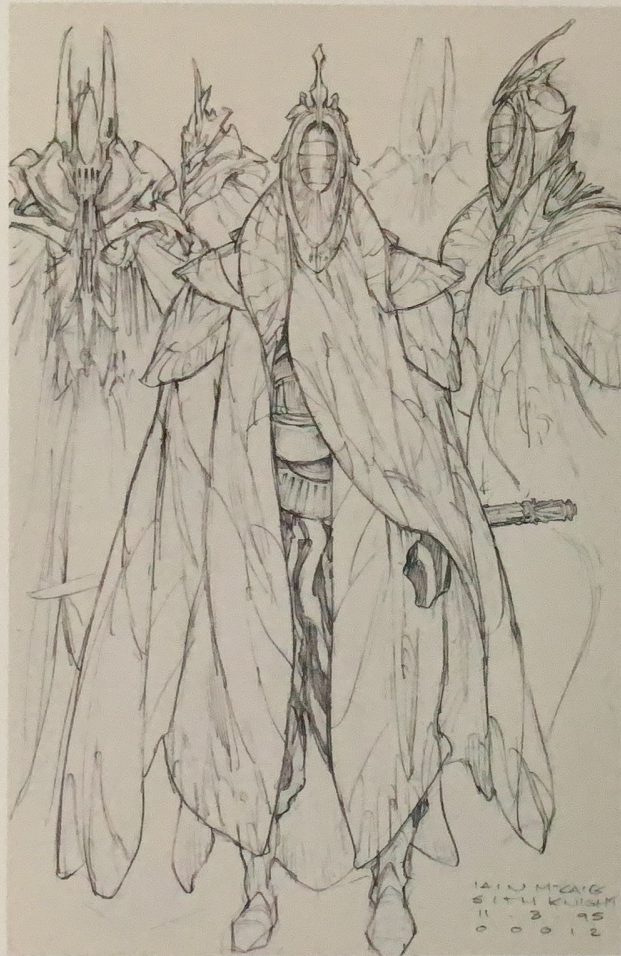
I was impressed by Ewan's charisma on screen. He's the right age, he looks a little like Alec, and he's got a mischievous quality about him.

Robin Gurland George wrote Anakin knowing that it would be an incredible task to find the right child actor. He had every imaginable element built into this kid, from mechanical ability to earnestness. Usually children's roles aren't that complex.

I interviewed about 3,000 Anakins.

George Lucas We went all over the world looking for kids. We started out when they were five, six, and seven years old. We have been interviewing these kids on a six-month to a yearly basis over the period of three years, watching them grow, watching them progress, doing tests, doing tapes. In the end it boiled down to about a half dozen kids.

Jake Lloyd was one of several kids that we brought in. I tested them myself and worked with them. Ultimately, I felt that Jake had the personality I was looking for combined with a very real talent that he exhibited when I worked with him during the testing period. Jake has all the funny, enthusiastic qualities and the acting talent it will take to pull this off.



2.140



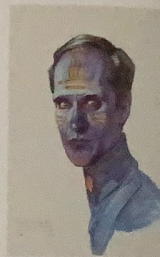
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- 2.140: Iain McCaig's concept for the Sith Knight (November 3, 1995) was one of the first designs he worked on.
- 2.141: McCaig explored the idea of a female Sith (April 19, 1996).
- 2.142-143: McCaig showed these concepts (December 1 & 1, 1995) to friends David Duzovetz and Greg Gonsky. The facial scarring influenced the final design for Darth Maul.
- 2.144: George Lucas asked McCaig to draw his worst nightmare but this idea for a Sith or Palpatine (December 2, 1996) was too scary so Lucas asked him to draw his second worst nightmare instead.
- 2.145: McCaig's idea for the Sith costume (December 2, 1996) was designed to move and flow with the character as he fought.



2.145

"I've never had my hair shaved before, and so that was an experience. They sketched everything out on my head and my face, drew the lines in and painted, added the horns, blackened the teeth and then put the lenses in, which was hard. The whole thing took about one hour and a half."

Ray Park / Darth Maul



2.140



2.148

- 2.140 This Sith Lord concept (April 2, 1996) is now recognizable as Darth Maul. However, McQuig drew feathers (tied around his head with wire), and these were later replaced by horns, giving the Sith Lord an even more demonic appearance.
- 2.141 The first appearance of Darth Maul. Darth Sidious introduces Nala Gunny to his new apprentice, indicating that he will be the one to locate the queen's missing ship.
- 2.148 Ray Park's transformation from martial artist to Sith Lord. The make-up process took one and a half hours.
- 2.149 Ray Park: "Darth Maul is nasty and he's got no remorse, no compassion for anything. I couldn't imagine at first how to play him because it didn't seem real. From my martial arts background you have to have a certain arrogance about yourself because you can't be intimidated by the other competitors. Maybe I have a bit of the dark side in me, as well."



2.141



2.149

Jake Lloyd Robin called my agent and asked, "How would Jake and his parents like to spend the summer in London?" When I found out, I screamed, "Oooooah!" It was very cool. I started bawling. I was so happy. Now everyone will know who is behind the mask of Darth Vader!

Jake Lloyd signed his contract on June 6, 1997. On June 18, the principal cast read through the fourth draft script, dated June 13, 1997, and titled *The Beginning*. The script was revised June 23, 1997.

June 26, 1997

Gavin Bocquet / Production Designer Normally you're somewhere for a week or two, and you get a chance to catch a deep breath. But this was relentless from the first day. Every two days we were moving to a completely new environment with new characters and new action and a new style.



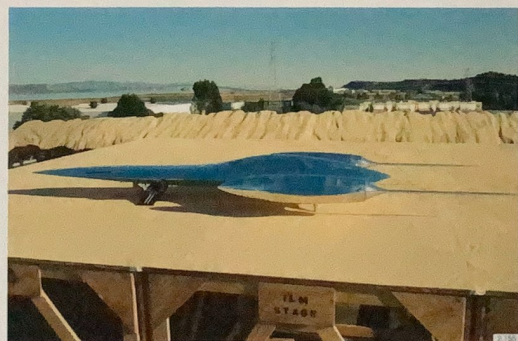
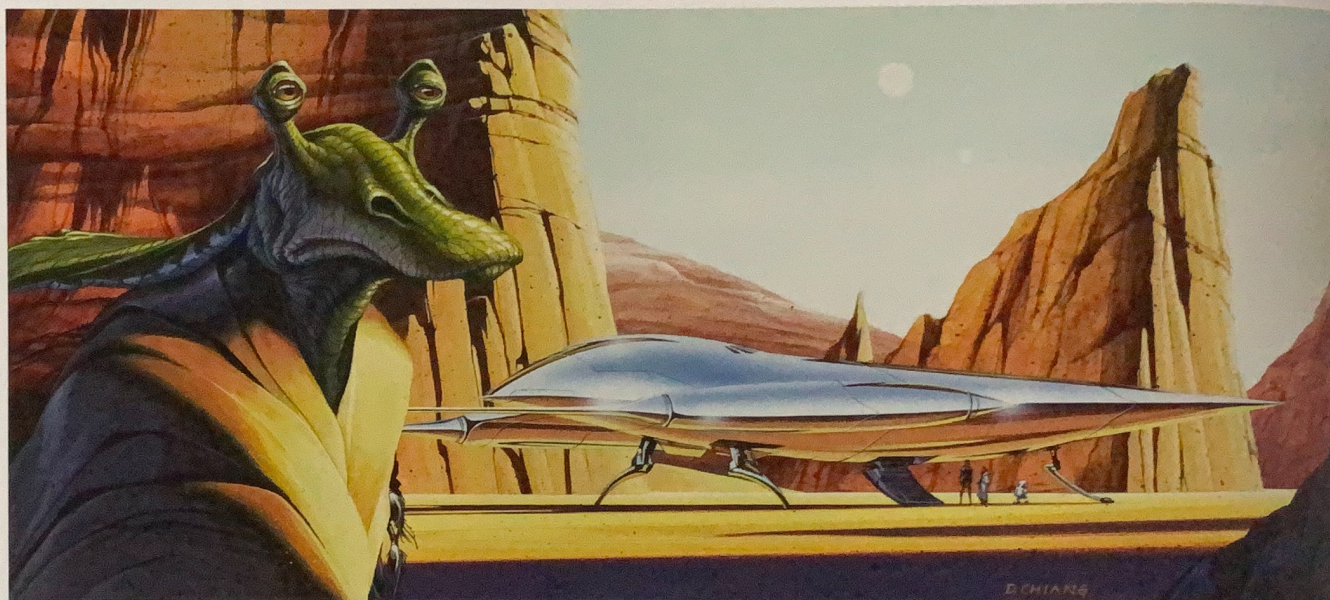
Production commenced on June 26, 1997, at Leavesden studios. The cast and crew were called for 8:00 a.m., the first shot of scene 77 was taken at 8:32 a.m., with the clapperboard indicating that the director was "Yoda."

Scene 77-EXT. CORUSCANT-BALCONY OVERLOOKING CITY-NIGHT DARTH SIDIOUS and DARTH MAUL look out over the vast city.

Darth Sidious (Ian McDiarmid) tells his apprentice Darth Maul (Ray Park) to go to Tatooine, kill the Jedi, then return the queen to Naboo and force her to sign the peace treaty with the Trade Federation. McDiarmid had played the Emperor in 1982, aged 37, for *Return of the Jedi* (1983).

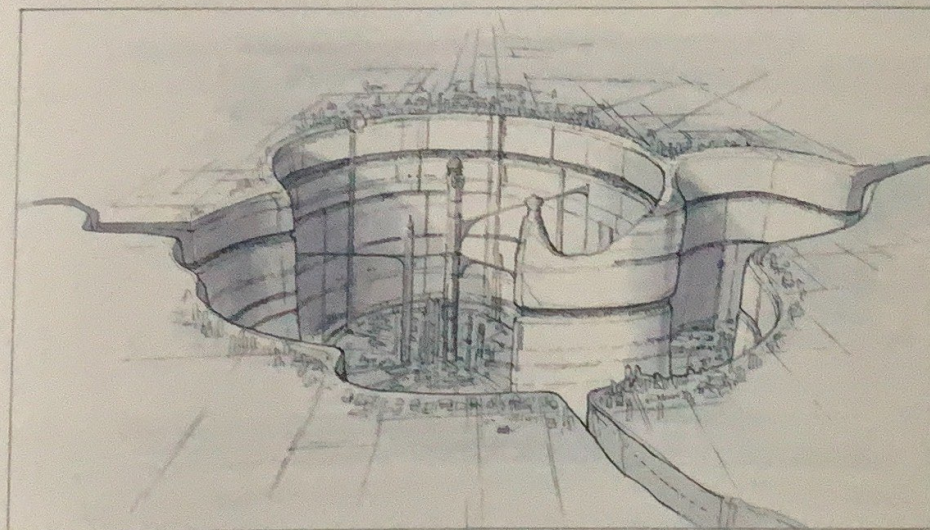
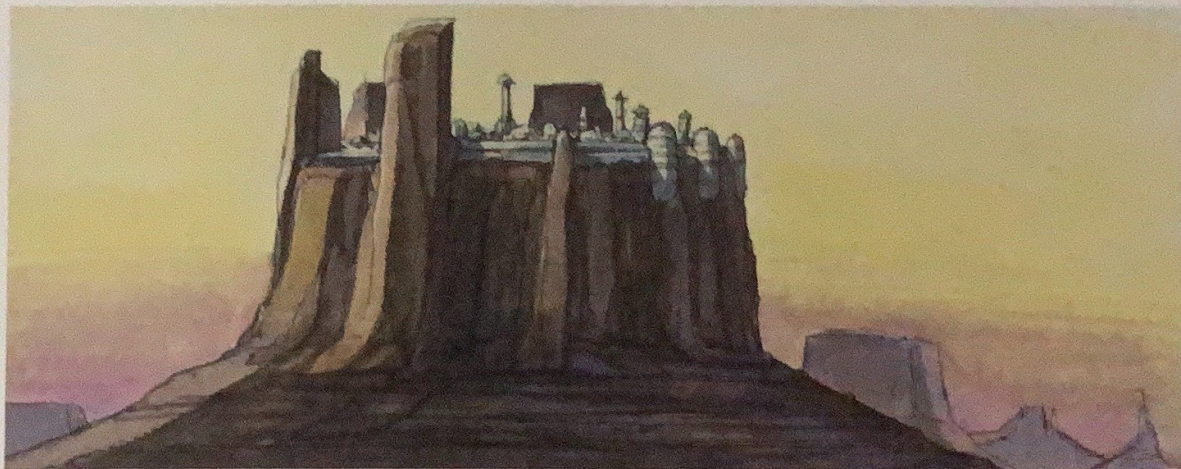
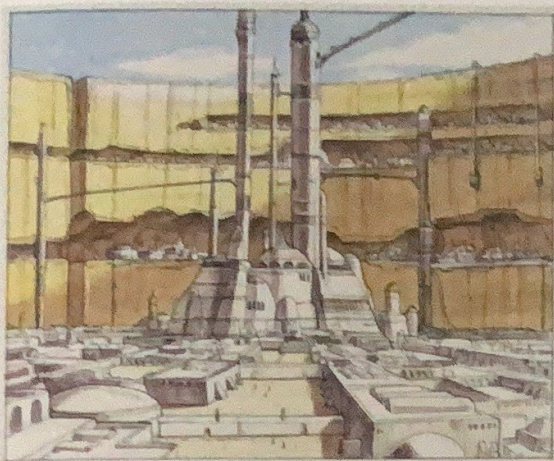
Ian McDiarmid It was an incredibly unique opportunity. I am basically myself in this film—though I got about 10 years' help from a hairpiece. Palpatine looks like me. That's fascinating.



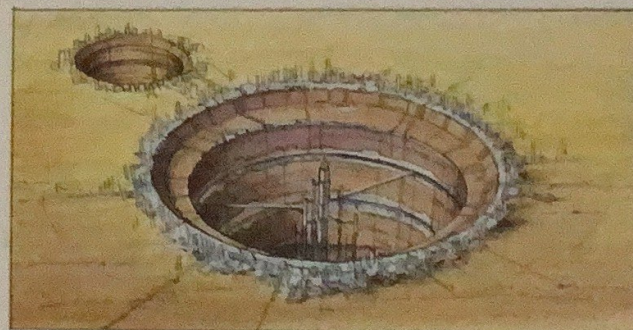


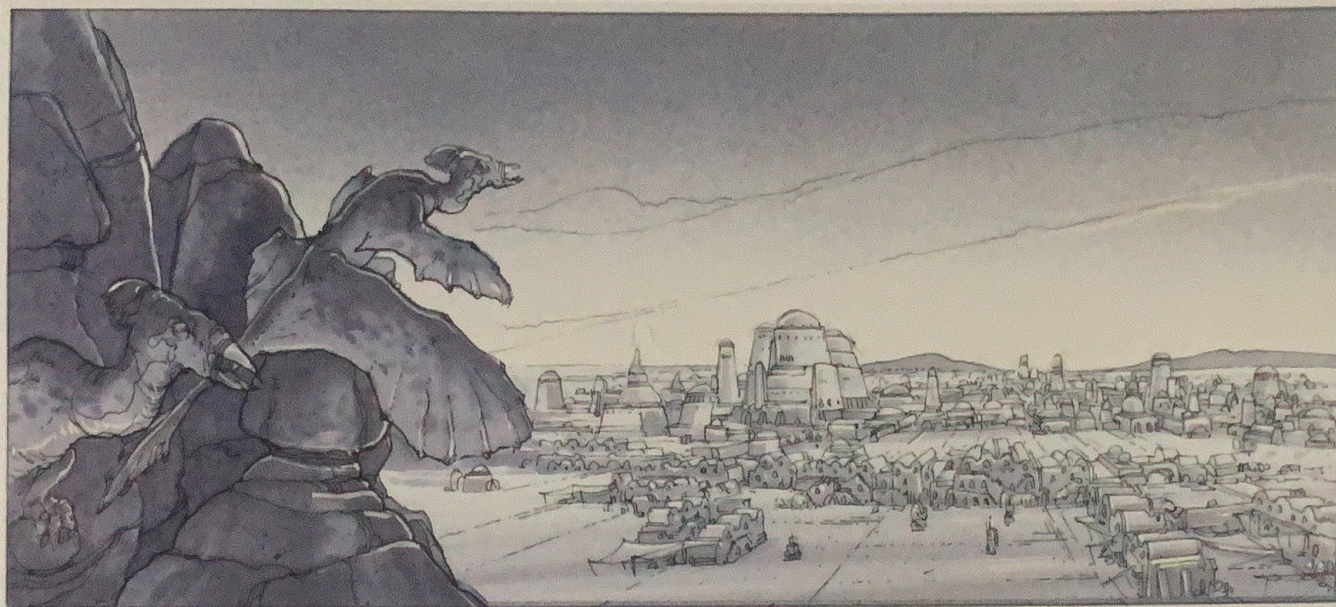
- 2-154 Doug Chiang's concept art for the queen's starship, which has landed on the desert planet of Tatooine, with Jar Jar in the foreground (May 23, 1996, 2.4 days).
- 2-155 The model of the queen's starship in the desert landscape of Tatooine was filmed on the roof of H.M. in San Rafael, California.
- 2-156 Filming in Tunisia. Qui-Gon and R2-D2 need to visit the city of Mos Espa to obtain parts to repair the hyperdrive, which was damaged during the escape from Naboo. Captain Panaka and Padme follow, insisting that the queen has ordered Padme to join them despite Qui-Gon's reservations. In the background is the gangway of the queen's starship supported by scaffolding; the rest of the ship will be added in postproduction.
- 2-157-159 Doug Chiang's designs, dated March 16, February 7 and 5, 1993, for the Tatooine city. One of the early ideas was that it be located in a big pit, like a larger version of Luke's homestead in Star Wars. It was a concept that Ralph McQuarrie, Joe Johnston, and Nilo Rodis-Jamero had explored for the unused rebel base in Return of the Jedi.



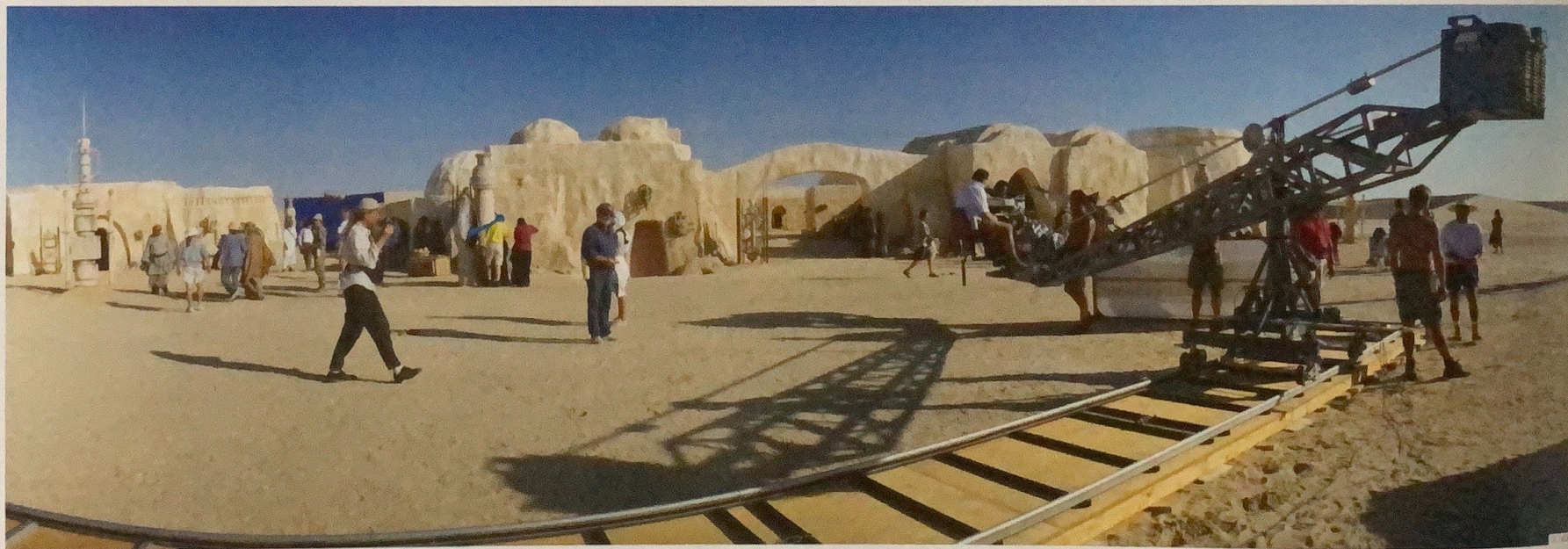


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- 2.160 Doug Chiang's later concept design for Mos Espa.
- 2.161 George Lucas (right) and production designer Gavin Bocquet (center right) inspect the scale model of Mos Espa to determine what will be built in Tunisia. Bocquet: "George was just adamant that the light and the sand and the whole environment of Tunisia were Tatooine, and he would not go anywhere else."
- 2.162 Lucas (center) setting up a shot on the Mos Espa set in Taseur, Tunisia, a few days after a storm had wrecked the set. Crew members worked frantically to effect repairs in time for the shoot.
- 2.163 Terry Whillatch imagined a landing platform for "avianahs (bat birds)" on Tatooine. July 7, 1993. Whillatch: "The domestic animals that they have on Tatooine, or the ones the Gungans ride, or the creatures that live in the swamp, need to have lives of their own to be believable."

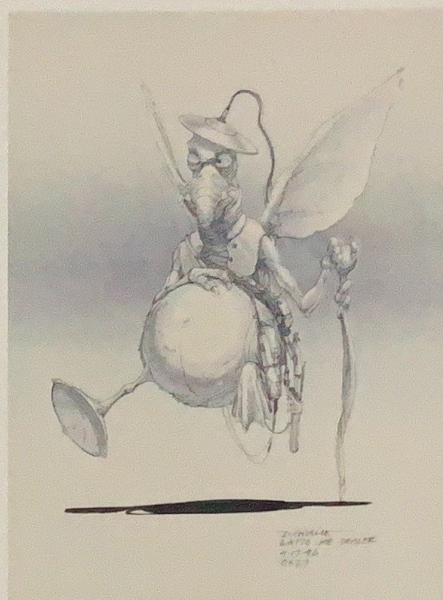




Terryl A. Hatch
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Tatosina landing strip
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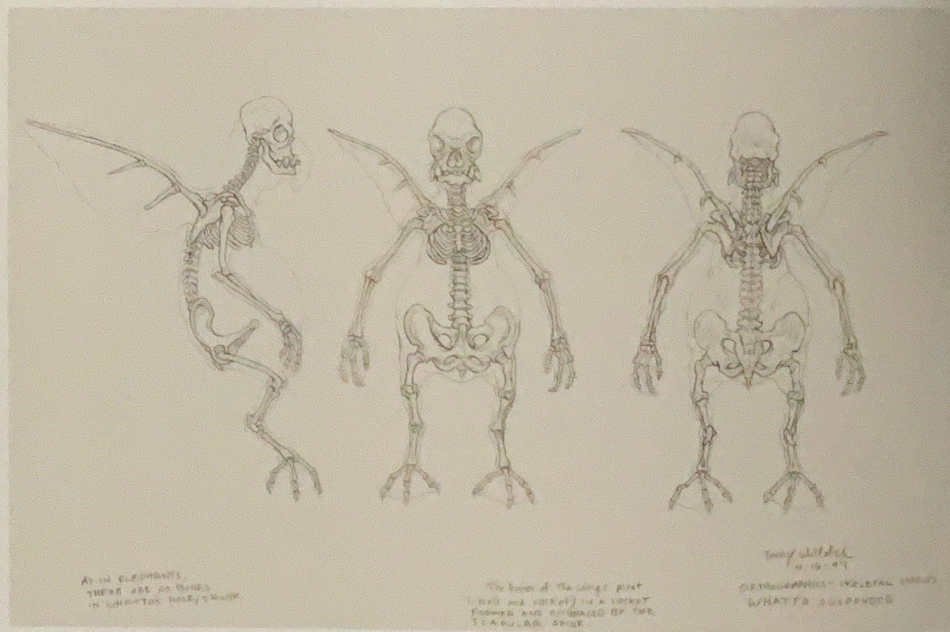
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2.107

"Watto's like an ugly little cherub. If you get your slide rules out, you'll say that he's too old, too short, and too fat—he could never fly."

Hal Hickel



101 Doug Chiang's concept for a trade baron (March 7, 1995—mistakenly dated "94") was rejected by Lucas.

102 Lucas asked Chiang to put the head of the rejected trade baron on a duck body and feet, and add little bat wings, to create Watto (April 17, 1996).

103 A digital paint concept of Watto by Doug Chiang (June 3, 1997).

104 Once the design was approved, Terry Willmet created orthographic anatomical studies for Watto, dated April 16, 1995, to help the digital construction of the character.

105 Final shot of Jar Jar, Padmé, and Qui-Gon meeting Watto and in search of parts to repair the hyperdrive.

106 Best, Partman, and Neeson in Watto's junk shop. Andy Secombe, playing Watto, is wearing a hat that provides an eyeline for the actors so that they can visualize where the junk dealer will be floating.

107 The junk shop interior set was built at Leavesden Studios outside London. Here Lucas views the scene via a video link during filming.

In my career as an actor I've often played older than myself, but you don't often go backwards in time—when you're really 15 years older—to play a character younger than yourself, and far younger than the same character you've already played.

David Tattersall The first shot of the day was always a master. After that, it was a matter of moving in to get two-shots, over-the-shoulders, and close-ups. We then switched to the reverse angle and repeated the process. It's a classical way of getting coverage, and so many other directors tie themselves in knots, from an editing standpoint, by not doing exactly that.

Two cameras were generally used to cover every setup—one wide and the other tighter, but at the same angle. The first camera would cover for the storyboard, while the second would get something else—it was fairly conventional. The first unit would start with George and then the second unit with cameraman Giles Nuttgens would follow up behind to

pick up their material. Giles shot several episodes of *Young Indy*, so he was somebody familiar with our procedures.

The great thing about doing a wide master first is that nobody on the set is in any doubt about what's going on in the scene, which is important when there are so many effects. If a director begins with the close-ups, or something in the middle of the scene, confusion can very easily occur.

There were eight setups for the scene, and 20 takes, each of them with a blue screen background where the nighttime cityscape of Coruscant would be added later by ILM.

David Tattersall We had a surveying team working with us during the shoot, collecting spatial and topographical information, but the Arri Camera Data Capture System recorded everything regarding the camera itself: focus, aperture, zoom controls, the geared head, the dolly, et cetera, and fed it into a laptop. Together

with the information collected by the survey team, ILM had a very good idea of what we were doing on each shot; they could replay any camera move in the virtual environment, which avoided the usual laborious match-moving process. The DCS required the camera assistant to do about 30 seconds of extra work on each take, but overall it had very little impact on our work.

The crew moved on to scene 127, where Anakin Skywalker (Jake Lloyd) and Jar Jar Binks (Ahmed Best) are in the infirmary of Palpatine's quarters, listening but not understanding what is happening inside. The short scene was completed in seven setups and 46 takes. However, since Jar Jar is in the scene there are multiple reference takes with and without Jar Jar in the shot, and also shots for light reference.

John Knoll We can take a clean plate—a scene with all the actors but without Jar Jar—and add a CG Jar Jar into the

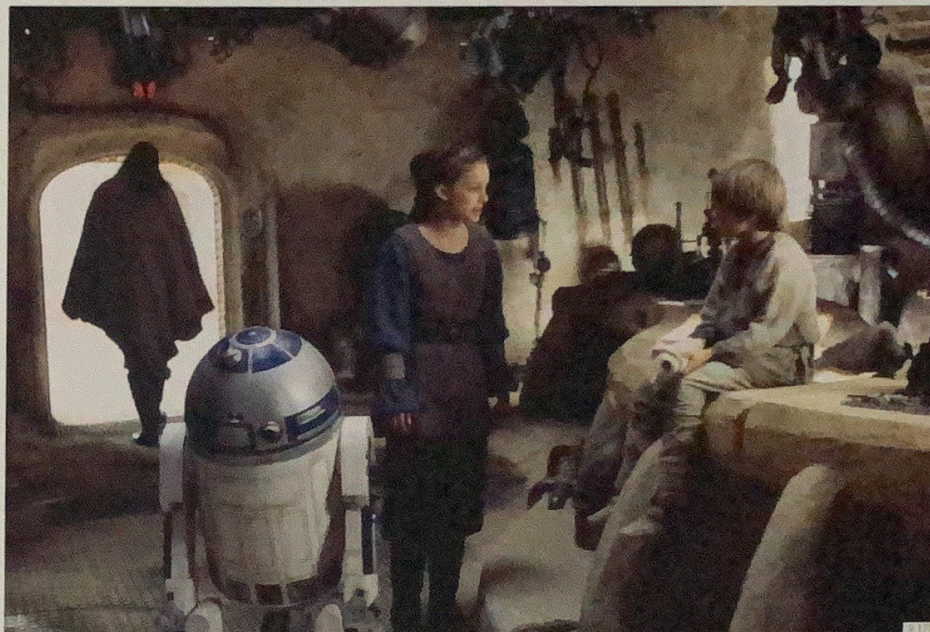




Terry Whitlock
11-21-95
Tatooine cantina/tavern
w/Anakin, tavern keeper, + customers



2.172



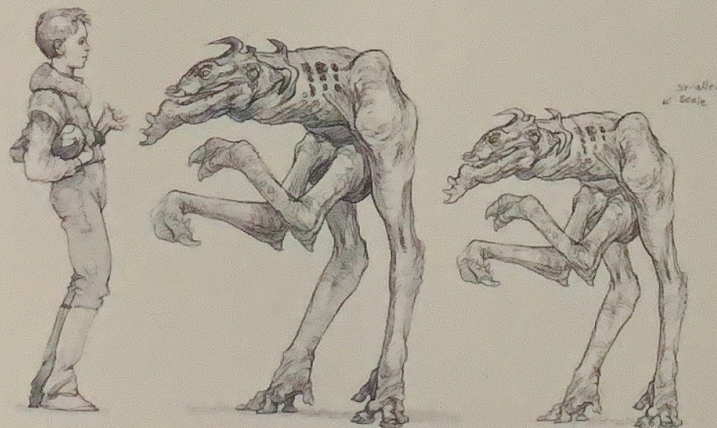
- 2.171 Terry Whitlatch's concept art, dated November 21, 1993, shows Anakin serving in a Tatooine cantina/taverna under the watchful eye of the owner. The two aliens sitting at the table were the basis for Ketuul in the Special Edition of *A New Hope* (1997).
- 2.172 Iain McCaig's concept for Anakin Skywalker (October 27, 1993).
- 2.173 Padmé and Artoo meet Anakin (Jake Lloyd) for the first time. "Are you an angel?" Anakin asks Padmé.
- 2.174 Jake Lloyd was eight years old when the film was shot in 1997. Lucas: "We tested literally thousands of kids. We went all over the world for two years doing tests, shooting tapes. Jake Lloyd was a natural. He reminded me of a young Luke Skywalker, and that was good because he had to embody the same presence that Luke had in the first film. Jake was somebody you liked a lot, who was a lot of fun and very alive. He was charming and witty as a person, and that carries through into his role."



2.174



Terry U. Hatch
7-29-95
Nemesis' Pod Racer
w/lo clothes
should I add an arm
tattoo?



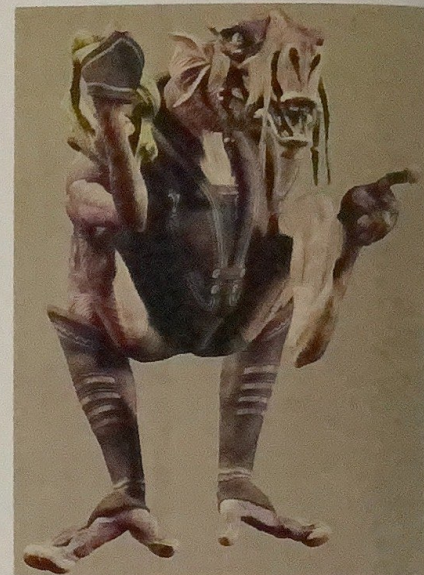
shot. That's one option. But when we started shooting in the set, the way Ahmed Best cast shadows on the walls and set, and the way that he interacted with the lighting, meant that the shots were going to be a lot better if we could use as much of his performance as possible, so that's the approach we're taking.

Also, we had two lighting exercises that we went through for every setup that involved a CG character. When you're putting a CG character into a shot you want to capture what kind of lighting was present on the set at the point where the character is standing. So we had a sphere. One side of it was a matte gray—the same 17 percent gray as our standard gray card—and the other side was chrome. For every setup we would shoot facing gray side toward camera and then chrome side toward the camera.

The chrome side was useful because you get to see where all the lights are in the room—the key and fill lights—and the ratio of all the lights.

The gray side, you can see what the key and fill ratio were, and what color the different lights were. When we were working with the image, a quick way to get the lighting is to put a CG gray sphere next to the sphere on the image, and move your CG lights around until the two spheres look like each other. Then you can put your CG character in the image, knowing the lighting is pretty close, and then start refining it.

Also for all the Jar Jar, Watto, and Sebulba scenes we had painted models that we'd film turning around in the light so we



"Jar Jar Binks took a year to design—literally several hundred drawings, including roughs—while Sebulba was 'sold' in an afternoon."

Terryl Whittatch



2.178

2.175 Terryl Whittatch concept art for Sebulba, Anakin's nemesis podracer (September 29, 1995). Whittatch: "George knew that he wanted a smallish (in order to fit into a racing pod) spidery character that walked on his hands and steered with his feet, was arrogant, sneaky, bad-tempered, as well as being a cheater and all-around bad guy. So I gave Sebulba the head of a sour, ill-tempered camel with hornlike structures and a spidery way of moving. It took only one day to get George's approval, and that's the way it went for most of the other podracer characters, who, after all, are rather minor characters. George saw, he liked, and we all breathed a sigh of relief!"

2.176 Computer graphic render of Sebulba holding a chuba.

2.177 Anakin stands up to Sebulba to protect Jar Jar; Jar Jar accidentally caused a chuba to be thrown at Sebulba. Anakin and Sebulba are rival podracers. Whittatch: "I think of Sebulba as 'his badness.' He doesn't care how he wins as long as he does."

2.178 Terryl Whittatch design for a Mos Espa street stall selling amphibian delicacies (December 16, 1996). Jar Jar can be seen in the background, his interest piqued.

2.179 Jar Jar grabs a tasty snack using his tongue but it is firmly attached to a wire.

2.180 Filming Best, as Jar Jar, perusing the street food on offer.

had color reference. For Jar Jar we had a full-size head and shoulders painted silicone model. For Watto we had a half-size model of the full body. And for Sebulba we had a half-size head and shoulders. This way, when we rotated the Watto model we could see how bright the blue body was, how bright the yellow belly was, how much accent and shadow the wings have, and so on.

Finally on the first day, shooting began on scene 128, where Palpatine tries to persuade Queen Amidala to call for a vote of no confidence in Senator Valorum. They filmed eight setups and 29 takes, with the scene to be completed the following day. Generally, there were more takes for the first setup as cast and crew learned their positions and refined the scene.

The first day finished at 8:00 p.m. after 12 hours of filming. Shooting days at Leavesden were often longer than 12 hours and rarely shorter.

July 1, 1997

Terence Stamp flew in from Australia to play Chancellor Valorum in two scenes. The first is scene 132, in the chancellor's pod at the Galactic Senate, where Valorum is attacked by a vote of no confidence from Queen Amidala, filmed on July 1.

Terence Stamp When they told me I would be playing the President of the Universe that caught my attention, but when I walked onto the set, no Natalie. "We've given Natalie the day off," they said. "That bit of paper on the post? That's Natalie. Deliver your lines to the paper."

Portman had completed her lines for the scene the previous day. Stamp asked Lucas for direction about his character.

Terence Stamp Lucas seemed rather astounded to be asked that. He paused, thought about it, then said, "He's a good man."

but beleaguered, a bit like President Clinton." That was it! No more direction.

On July 2 the remaining principal actors started on the production in scene 126, on the Senate landing platform, where the queen, her entourage, the Jedi, and Anakin are met by Senator Palpatine and Chancellor Valorum.

Liam Neeson Our very first scene involved coming down the platform to meet Valorum. Ewan and I were just thrilled. We kept laughing and shouting, "Yeeedth! We're in Star Wars!"

This scene, like many scenes for the movie, involved acting against blue screen and alongside characters that did not yet exist.

George Lucas Star Wars is really make-believe, like an old-time, old-fashioned movie, which is one of the reasons why I wanted



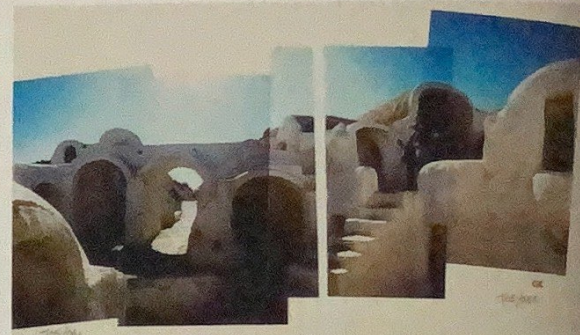
2.180

"We were looking for something that could be a slave quarters and we came across these ksour, which were old grain stores for tiny towns and villages in North Africa. They're two or three stories, and almost catacomb-like, but above ground."

Gavin Bocquet / Production Designer



2.181



2.181 Tatuoine slum scene designed by Terry Whittlatch (February 6, 1996). Whittlatch shows a street performer entertaining the slum dwellers and populates the scene with Ubiquians, a Jawa, and an Ortolan to connect it to the cantina scene in A New Hope and Jabba's palace in Return of the Jedi.

2.182 Gavin Bocquet and Rick McCallum went location scouting in the summer of 1994, before there was a script, knowing that some of the story would take place on Tatuoine. They found Ksar Ouled Soltane, a fortified granary, in the Tatuouine district of Tunisia, and Terry Whittlatch used photos of this location as reference.

2.183 This slum scene by Whittlatch features the daily life around Shmi and Anakin's slave quarters (February 5, 1996).



"I was so, so nervous about my accent when I met George. He said, 'Just relax. She can be coming from a Swedish galaxy.'"

Pernilla August/Shmi



2.184



2.185

2.184 Anakin offers his new friends refuge from the storm in his home. Anakin is portrayed as a kind boy who is always helping people and fixing things.

2.185 Jira (Margaret Turner) warns the party of the impending storm.

2.186 Shot log from January 30, 1995, showing Lucas's review of the sandstorm scene, detailing the alterations he felt were needed to enhance the sequence, including adding a creature or droid in the foreground to cover Anakin's dialogue flub. Also note that for some shots, Ahmed Best's body performance is used and only Jar Jar's head is replaced, whereas in other shots Jar Jar has to be added.

2.187 Padmé and Qui-Gon meet Anakin's mother Shmi (Pernilla August) in the slave quarters. Gavin Borquet: "When you go through a door in Tunisia, you have to have a set at Leavenworth that is architecturally, texture-wise, and size-wise in sympathy with it."

2.188 The production encountered problems shooting R2-D2 in Anakin's hovel. It was an enclosed space with narrow doors and uneven flooring and the droid failed to operate correctly during a number of takes. The solution was to commission ILM and the Effects Department to construct some replacement R2-D2 units. Despite all the difficulties, the little droid endeared itself to at least one member of the cast.

Project: Federation
Bin: +Sub-Clips - Sc. 71 & 72

Bri - page 1 of 2
Fri, Jan 30, 1998 8:07 AM

Name



JAK/GWL Notes, 01/20/98:
(68B/1 "B")
Mos Espa Street - Revised shot: Push-in on group, they exit R. Creature or droid in fg to cover Anakin's dialogue flub. Add tail to shot to extend shot. Double ending from



JAK/GWL Notes, 01/20/98:
(XVV75B-3)
Mos Espa Sandstorm - Guy runs into doorway, 2nd. guy on L. in bg. 2nd. guy is patched in.



JAK/GWL Notes, 01/20/98:
(XVV75A-1)
2 more characters run from sandstorm. Guy crossing L-R is same guy in doorway of previous shot patched in. JISS 071 0111



JAK/GWL Notes, 01/20/98:



JAK/GWL Notes, 01/20/98:
(71/3)
WS Qui-Gon, Padmé, Anakin in doorway. Add more bg people.



JAK/GWL Notes, 01/20/98:
(72H/2)
WS Anakin, Jar Jar, Qui-Gon into hovel. Use ref cut - Jar Jar head replacement.



JAK/GWL Notes, 01/20/98:



JAK/GWL Notes, 01/20/98:
(72/20pu "B")
MWS Group meets Shmi. Add Jar Jar.

to do it. I'd never done a movie like that before—where it's all blue screen. We'd sit down the actors and say, "This is like a stage play. It's going to have no sets, just you on the stage, doing *Hamlet* or *Waiting for Godot*. You can do this." We showed them pictures of what the set looks like, or play the animatics, so they'd have an idea.

Liam Neeson We would watch the scene on these little screens with computer figures. So it was like, "Oh, yeah, I go here and there." It was great to see the scene before you shot it.

Natalie Portman The acting was so technical in many ways. It's about hitting marks and keeping eye lines.

Liam Neeson It was a new technique to be learned. I have to admit, I wanted to make the scene real and give a sense to an audience that this is an everyday occurrence, that I talk to these creatures all the time, no matter what they look like or where they are from. So I wanted to keep my acting very simple, straightforward, and truthful.

July 15, 1997

From July 10 to 15 the scenes set in Anakin's hovel were filmed on D Stage. On the last day, C-3PO appears for the first time. As designed by Doug Chiang, C-3PO was still being constructed by Anakin.

John Knoll When we saw the designs it was quite clear that it was impossible to use a guy inside a suit. We thought it either had to be computer-generated or it needed to be a puppet of some kind.

Both George and I had seen Bunraku, a Japanese puppeteering technique where a performer is all in black against a black background, the puppet is attached to the front of the performer, and it's lit so that you can't see the performer very well. I thought we could do the same thing for C-3PO.

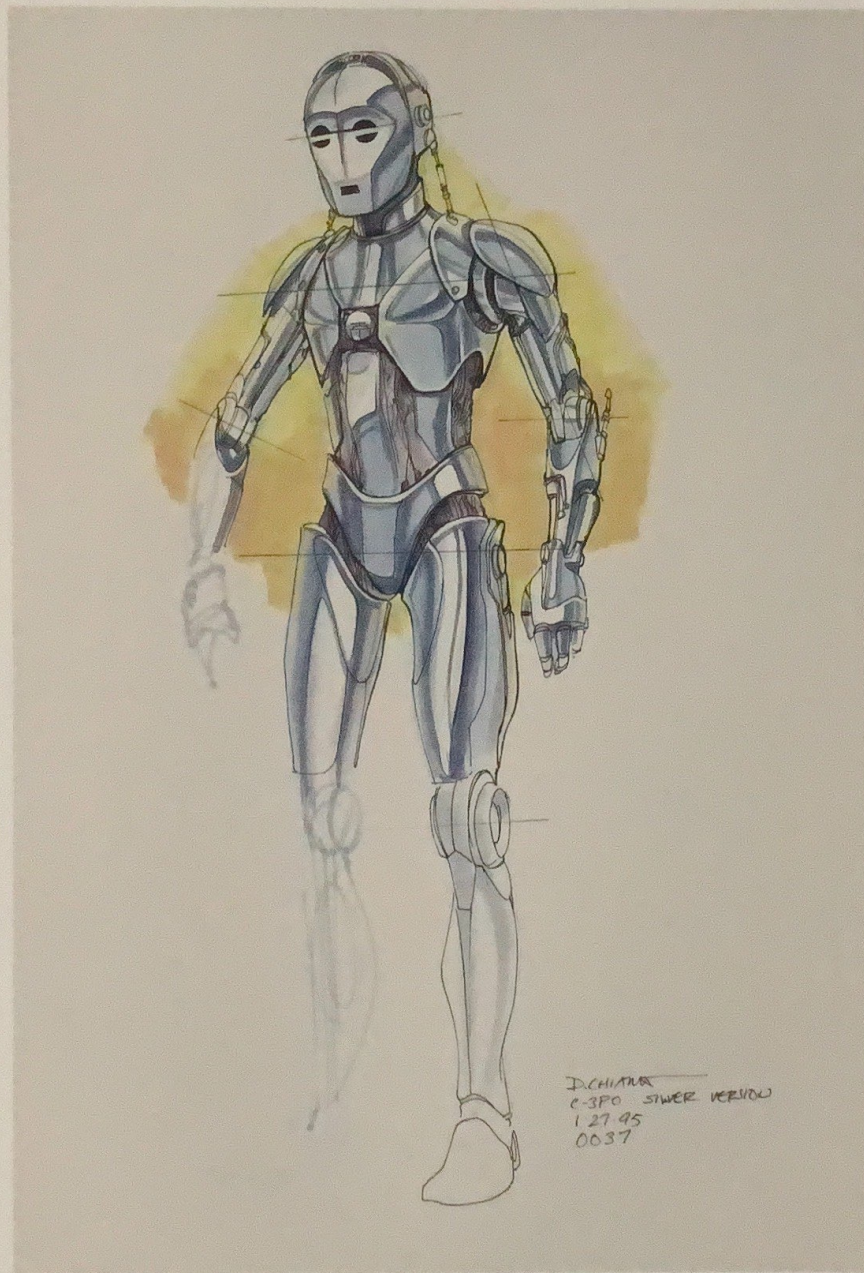
Mike Lynch in the model shop built a crude mock-up and attached it to his front. We shot a test on video and showed it to



2.187



2.188



2.189

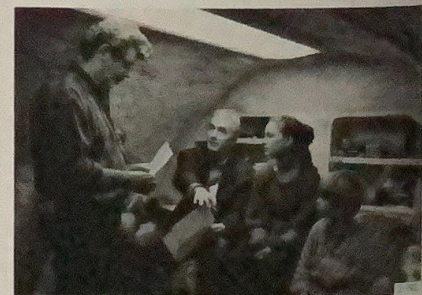
“George wanted Anakin’s homemade version of a protocol droid. Being homemade and unfinished, George described it as ‘a man of wires.’ I went through many, many drawings trying to determine how naked, so to speak, C-3PO should be.”

Doug Chiang

- 2.189 Doug Chiang’s early concept for C-3PO (January 27, 1995). The design has an angular style and bears a passing resemblance to Ralph McQuarrie’s original Threepio concepts for Star Wars.
- 2.190 C-3PO dialogue, dated March 31, 1995, with some alternative lines updated from the original script. These were “wild lines” recorded separately by Anthony Daniels then synchronized to the action in the film.
- 2.191 Doug Chiang’s 1995 concept art shows C-3PO in the process of being constructed by Anakin. The concept art experimented with establishing different levels of completion for the protocol droid.
- 2.192 Anthony Daniels (second left) read his lines offscreen during filming.



2.191



2.190

UPDATE: - 3/31/98 (from 3/30/98)
LINES TO RECORD WILD - C3PO

C3PO (S: 33) "HELLO, WHO ARE YOU?"
"GOOD TO MEET YOU, R2D2. I AM C3PO, HUMAN CYBORG RELATIONS."

C3PO (S: 42) "I FIND THAT JAR JAR CREATURE TO BE A LITTLE ODD. ARTOO."

Alternative: "DON'T YOU FIND THAT JAR JAR CREATURE TO BE A LITTLE ODD, ARTOO?"
"YOU'RE RIGHT, ARTOO. HE'S VERY, YARRR, ODD."

C3PO (S: 43) "SPACE TRAVEL SOUNDS DANGEROUS!"
"I ASSURE YOU, R2, THEY'LL NEVER GET ME INTO ONE OF THOSE DREADFUL STARRIPS!"

C3PO (S: 42 - Pw 040) "OH MY! I HOPE THEY DON'T START MORE THINGS WHILE I'M OUT HERE!"

C3PO (S: 44) "HE HAS TO GO AROUND TWO MORE TIMES! OH DEAR!"

C3PO (S: 100) "THE WORD: I CAN'T BELIEVE IT!"
Alternative: "MASTER ANAKIN WQN"



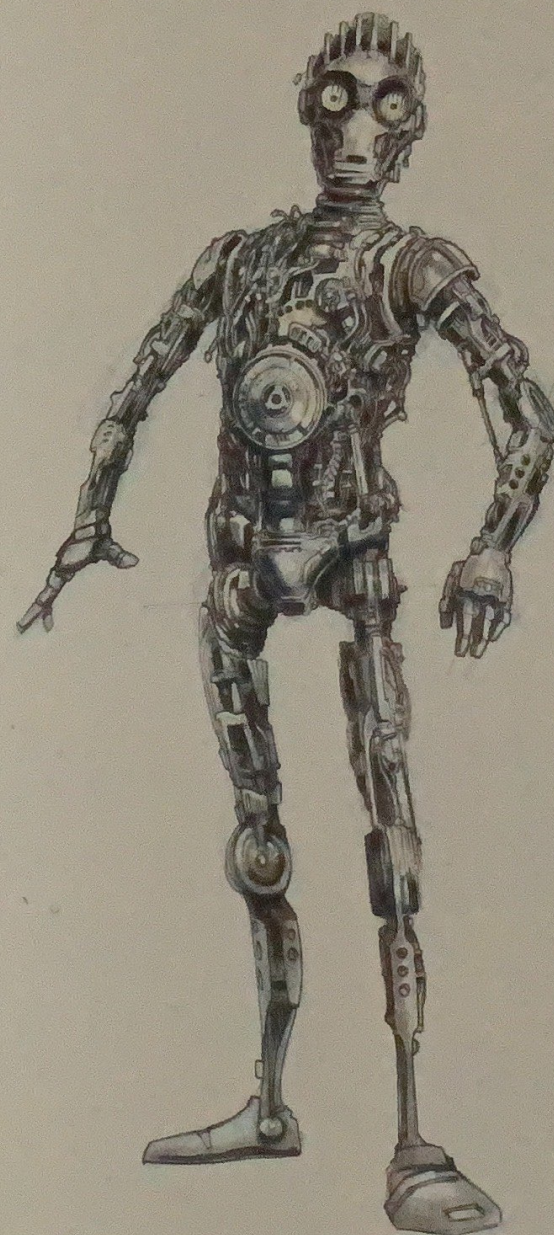
2.103 Because C-3PO was still being constructed, Anthony Daniels was not able to wear the suit, so the protocol droid's basic frame was attached to chief model maker Michael Lynch, who provided the movement.

2.104-195 C-3PO introduces himself to R2-D2, the beginning of a humorous and tempestuous droid friendship. The scene was shot with puppeteer Michael Lynch operating C-3PO as



Anthony Daniels spoke off camera and was then shot without C-3PO to give a background plate in the same lighting conditions. The puppeteer was digitally removed frame-by-frame by ILM in postproduction, and the clean background added behind him.

2.196 Very close to final version of C-3PO by Dong Chiang (October 30, 1995).



DONG CHIANG
C-3PO
10.30.95
0440

Prod. Office: Leavesden Studios
Hill Farm Avenue, Leavesden, Herts
Tel: Fax:
2nd AD Bernie Bellew

JAK PRODUCTIONS LTD
STAR WARS - EPISODE 1
THE BEGINNING

Date: Thursday 26 July 1997
Call Sheet No: 1

UNIT CALL ON SET: 8.00am
B/fast in canteen from 7.00am

Director: George Lucas
Producer: Rick McCallum

NO SMOKING, FOOD OR DRINK ON THIS SET

LOCATION	SET - DESCRIPTION	SCENE	D/N	Pgs	CAST
MS2 STAGE	Ext Coruscant-Balcony overlooking City				
Leavesden Studio	Sidious tells Maul to dispense with Queen & Jedi	77	N	4/8	12.13
	Int Palpatine's Quarters - Anteroom				
	Jar Jar comments on the address	127	D	3/8	2.3.6.9.10.11.47
	Int Palpatine's Quarters - Living Area				
	Amidala confers with Palpatine	128	D	1 1/8	2.3.6.9.10.11.47

ARTISTE	CHARACTER	DR	P.UP	M.UP/W	L.UP	ON SET
2 Jake Lloyd	Anakin	4	08.20	09.00		10.00
3 Natalie Portman	Queen Amidala	6	07.20	08.00		10.00
6 Hugh Quarshie	Captain Panaka	1	07.50	08.30		10.00
9 Christina Di Silva	Rabe	T 1	07.20	08.00		10.00
10 Liz Wilson	Eirtae	T 2	08.00	08.20		10.00
11 Ian McDiarmid	Palpatine	2	-	-		10.00
12 Ian McDiarmid	Darth Sidious	2	06.10	06.45		08.00
13 Ray Park	Darth Maul	3	-	06.30		08.00
47 Ahmed Best	Jar Jar	3	08.00	08.45		10.00
STAND INS						
Steve Ricard	Utility					08.00
Joan Field	Queen					09.00
Ray Griffiths	Anakin					09.00
Paul Kite	Utility					08.00
CHAPERONES						
Lisa Lloyd	For Jake Lloyd					09.00
CROWD (Total: 1)						
John Fensom	Protocol droid	T 3		09.00		10.00

REQUIREMENTS

PROPS: As per Ty Telger and Peter Walpole
VISUAL EFFECTS: Jar Jar to be tested on film for ILM when time allows
SPECIAL EFFECTS: Wind fx on balcony
CREATURE EFFECTS: Dressing area on set for Protocol droid
MAKE-UP/HAIR: Optician Gemma Scott-Knox-Gore on set with lenses for Maul at 7.30
FITTINGS: Kamay (Valorum's Asst.) at studio for fitting 15.00
ARTIST TRAVEL: Arrivals: Terence Stamp (Valorum) arr. LHR 5.50am
CATERING: Breakfast available in canteen from 7.00am. AM & PM breaks on set for 100 people
UNIT NOTE: Please park milk floats sensibly to ensure entrances/exits to the stages are kept clear, and keep doorways and stairwells clear of equipment - Thank you.

ADVANCE SCHEDULE

Date/Loc	Set	Scene	D/N	Pgs	Cast
Fri 27 June (MS2 stage)	Int Palpatine's Quarters	135	N	2	3.6.9.10.11.47
	Int Hologram/Naboo Palace Throne Rm	18pt	D	1/8	11
Sat 28 June	REST DAY				
Sun 29 June	REST DAY				
Mon 30 June (B stage)	Int Alderaan Box - Galactic Senate	132pt	D	2/8	3.6.9.10.11.27.62.63
	Int Queen's Box - Galactic Senate	132pt	D	2	3.6.9.10.11.27.62.63

Chris Newman - Assistant Director



-
- A close-up, high-contrast image of a person's face, heavily covered in blood and gore. The person is wearing a dark, hooded garment. The background is dark and blurry, suggesting an urban setting at night. The image is framed by a black border.

2201



2.203

George: It was a little funky, and it's going to be really hard to paint out the performer, but George really wanted to have C-3PO present in the set for the lighting and for the interaction, so I thought, all right, let's do it!

During the scene, Anthony Daniels was just off camera reading his lines and Mike Lynch was performing the puppet.

Because C-3PO is so skeletal and you can see right through him in so many places, I was concerned that it would be impossible to completely remove the rods and the puppeteer, so we had Mike wear different colored suits in each scene. Anakin's bedroom is dark, so we have Mike in black to contrast with C-3PO. Likewise, out in the desert, we will have him in a light tan suit so that it is like the sandy color in the background behind him.

July 21, 1997

David Tattersall We had three distinct phases on the production. The first was to work our way through our initial 25 sets at the studio (including the Galactic Senate Chamber, Senate landing platform, Anakin's home on Tatooine, Watto's junk shop, and Watto's box at the Anchorhead Arena). In the second phase, the company moved on to Italy and then Tunisia for location work (depicting the queen's palace on Naboo, and desert exteriors on Tatooine). Meanwhile, all of the wrapped sets at Leavesden would be replaced with new ones—we'd then return to shoot phase three, using the next 25 sets (including the Jedi Council Chamber, the starfighter hangar in Theed, and the palace's generator complex).

"Back in my racing days, when I was 16, the Maserati Birdcage was my favorite car. I loved the design of that car, so when we were again trying to come up with 25 different designs for 25 different pods I decided to incorporate my favorite design into Anakin's pod."

George Lucas

The advantage to this plan was that we had time to pre-rig and pre-light before we began shooting phases one and three, which allowed us to just go from one set to the next.

On July 21, the main unit moved to the Royal Palace of Caserta in Italy to shoot the scenes set in the throne room of the Naboo palace.

George Lucas We're developing the technology to create sets but there are some things you wouldn't want to create in the computer. The palace is an incredible piece of architecture and to try to re-create it digitally would be a vast amount of work, so it's much easier to take advantage of some of the creations that already exist.

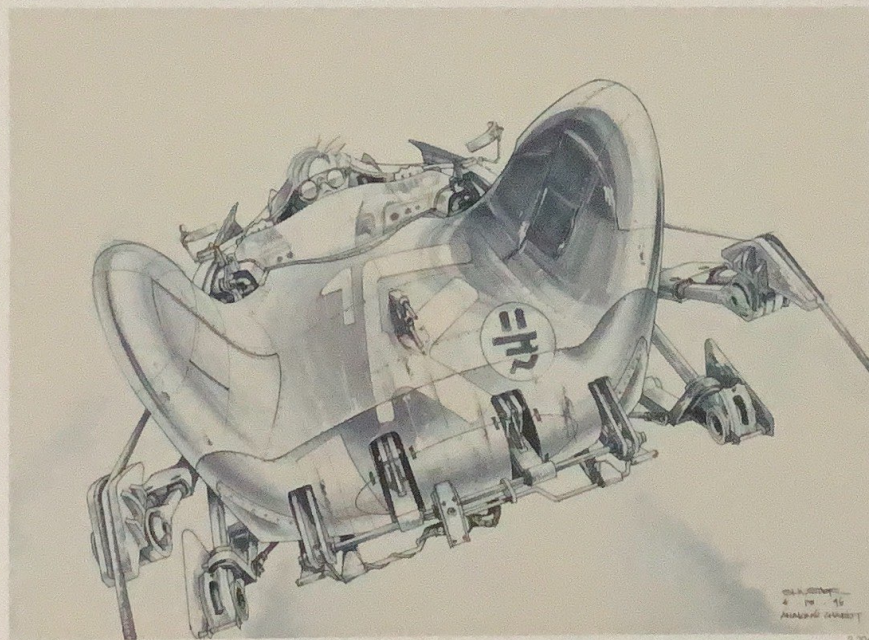
Gavin Bocquet We were looking for a very specific thing: giant picture windows behind the queen's throne. We found a

2.203 *Anakin is confident about winning the podrace. His friends, Amee (Katie Lucas), Melee (Megan U dall), Wald (Warwick Davis), Seek (Oliver Walpole), and Kistler (Dhrur Chanchan), less so.*

2.204 *Jay Shuster's design for a podracer (June 19, 1996). Shuster: "What was really special about the Maserati Birdcage was its really pronounced fenders. George wanted Anakin to sit really low into it."*

2.205 *Anakin manages to complete the construction of his pod. "It's working! It's working!"*

2.206 *Lucas directs Lloyd on the art of pod construction. Ahmed Best can be seen in the background preparing for Jar Jar's comedy moment with the pod's engine, while Kenny Baker stands by to perform as R2-D2.*



2.204



2.205

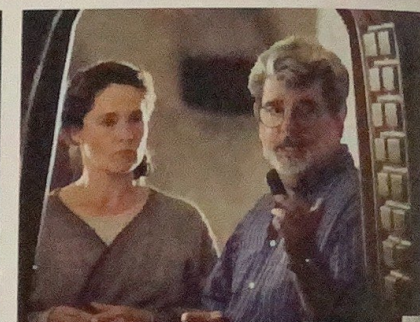


**"The Force is like dark matter or gravity—
we know it exists but we don't quite know
how it works."**

George Lucas



2.207



2.207 A miniature of the Mos Espa slave quarters for a nighttime wide shot, here being detailed by digital matte painter and former model maker Bill George. This is the background for the balcony scene where Qui-Gon takes some of Anakin's blood to test for midi-chlorians.

2.208 Lucas directs Pernilla August inside the slave quarters as she calls for Anakin to go to bed before his big day at the podrace.

2.209 Lucas originally wrote and shot Qui-Gon testing Anakin for midi-chlorians in the Mos Espa arena hangar after winning the race. However, Lucas decided that Anakin should be tested earlier in the story, showing that Qui-Gon already knew the boy was Force-sensitive. These storyboards, dated May 1, 1998, were in preparation for the August reshoots, and they depict Anakin being tested in his bedroom.

2.210 Final frame of Anakin going to bed as Qui-Gon prepares to send the sample to Obi-Wan for analysis.

2.211 Kurt Kaufman's concept art (August 26, 1998) for the background setting to be composited into the shot where Qui-Gon sits on the balcony with Anakin.

2.212 Qui-Gon takes a sample of Anakin's blood. The entire scene was shot on August 12 and 13, 1998, with film and digital cameras. Lucas: "Midi-chlorians are a loose depiction of mitochondria, which are necessary components for cells to divide. They probably had something—which will come out someday—to do with the beginnings of life and how one cell decided to become two cells with a little help from this other little creature who came in, without whom life couldn't exist. And it's really a way of saying we have hundreds of little creatures who live on us, and without them, we all would die. There wouldn't be any life. They are necessary for us; we are necessary for them. Using them in the metaphor, saying society is the same way, says we all must get along with each other."

REEL 3

Sc No: 083A PICT #1

INT. ANAKIN'S BEDROOM.



Qui-Gon & Anakin - midi-chlorians.



REEL 3

Sc No: 083A PICT #2

INT. ANAKIN'S BEDROOM.



Qui-Gon & Anakin - midi-chlorians.



REEL 3

Sc No: 083A PICT #3

INT. ANAKIN'S BEDROOM.



Qui-Gon & Anakin - midi-chlorians.



REEL 3

Sc No: 083A PICT #4

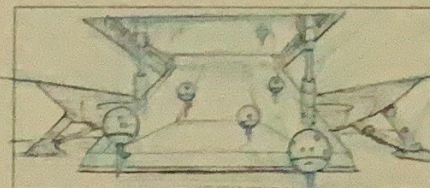
INT. ANAKIN'S BEDROOM.



Qui-Gon & Anakin - midi-chlorians.







23/4

2.213 Doug Chiang's artwork for Darth Maul's spaceship, the Sith Infiltrator. January 16, 1999, 3.5 days. Chiang: "My initial take on Darth Maul's spaceship was that it was going to have parts of the Imperial shuttle and TIE fighters we saw in the first three films, both in proportion and texture. So I took little bits and pieces from those two original designs and put them together."

2.214 Benton Jew's storyboard for Darth Maul's arrival on Tatooine. Maul surveys the area then sends out football-sized probe droids to the cities.

2.215 Final frame of Darth Maul emerging from the Sith Infiltrator.

2.216 A deleted scene, set at sunrise on the day of the race, begins with Padmé bringing breakfast for Anakin, walking past the droids as they finish painting and cleaning the racing pod, and waking Anakin. This deleted scene was included on the home video release.

2.217-220 Paul Tapson's storyboards for the deleted scene ends with Anakin surprising Padmé with an affectionate kiss on the cheek.

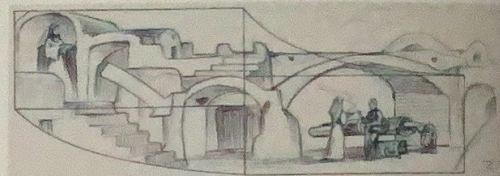
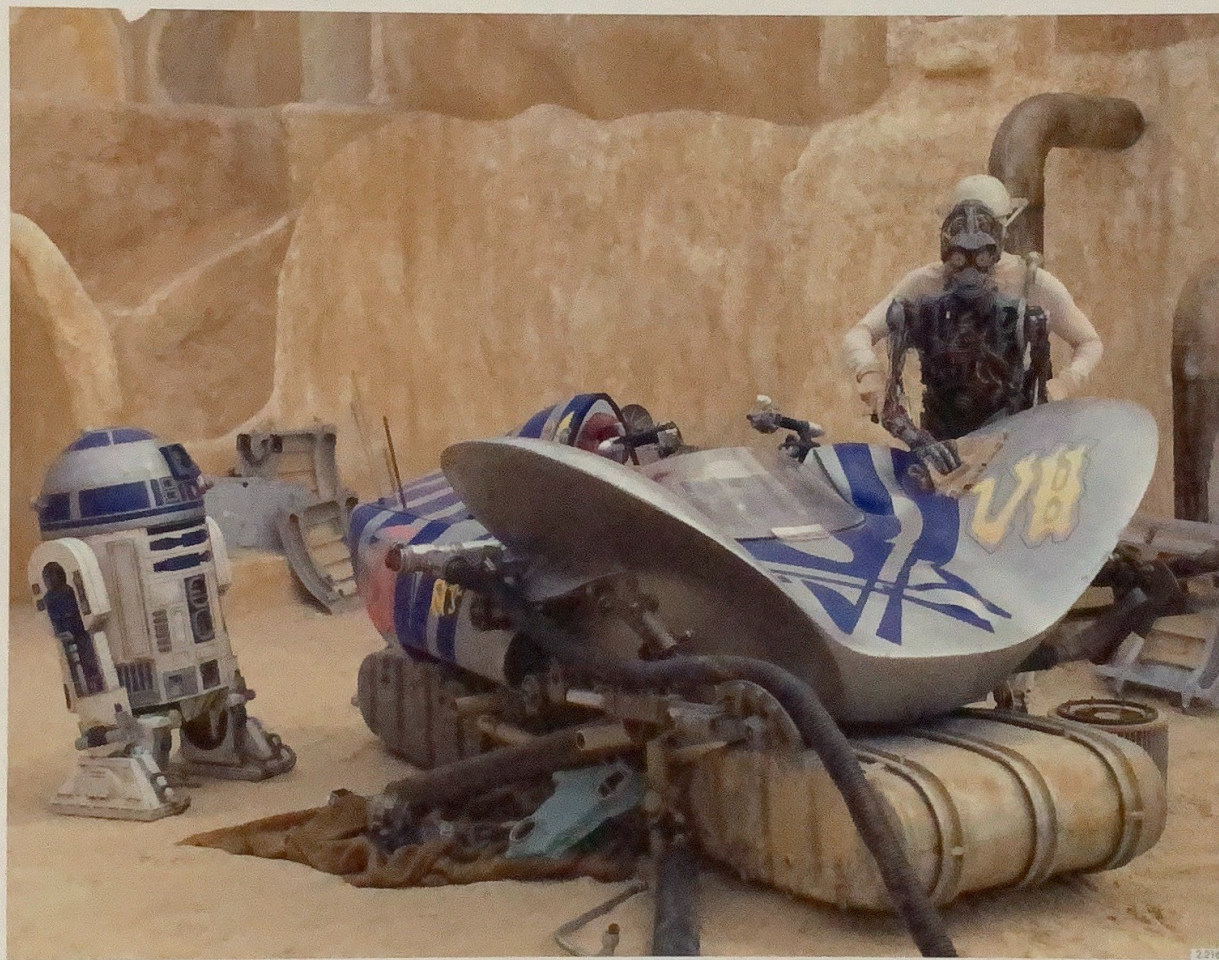
2.221 As filmed, Anakin reveals to Padmé that he was dreaming about her leading a great army into battle. Kilaro then arrives with some couples to deliver the podrace to the arena.



23/4

"I'm used to being a documentary filmmaker and letting the environment influence what happens. I've done that in all of my movies. You plan things out as much as you can but on the set you allow real life to take over, and you go with the flow of whatever is happening on the set at that particular moment."

George Lucas



2.20



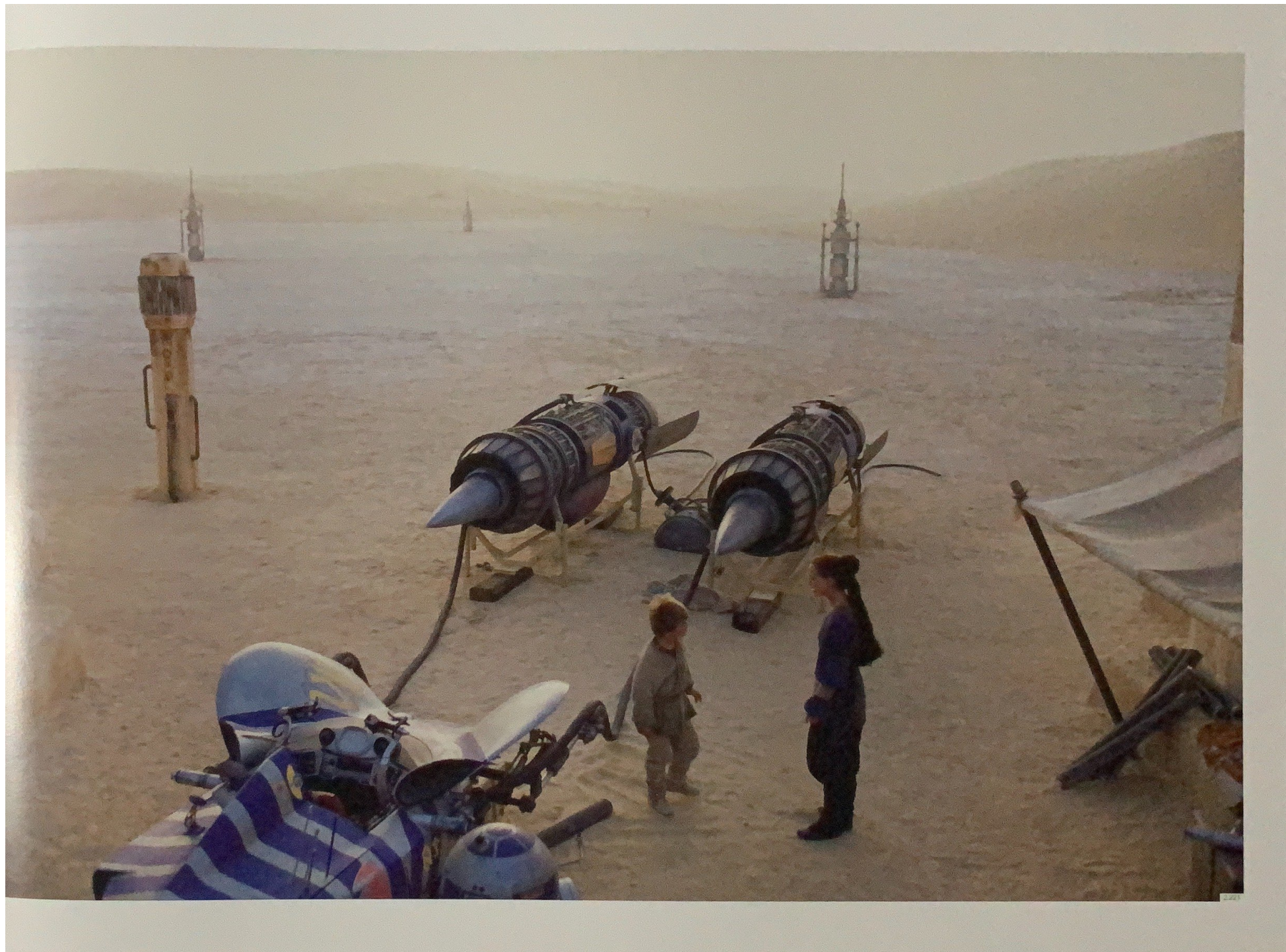
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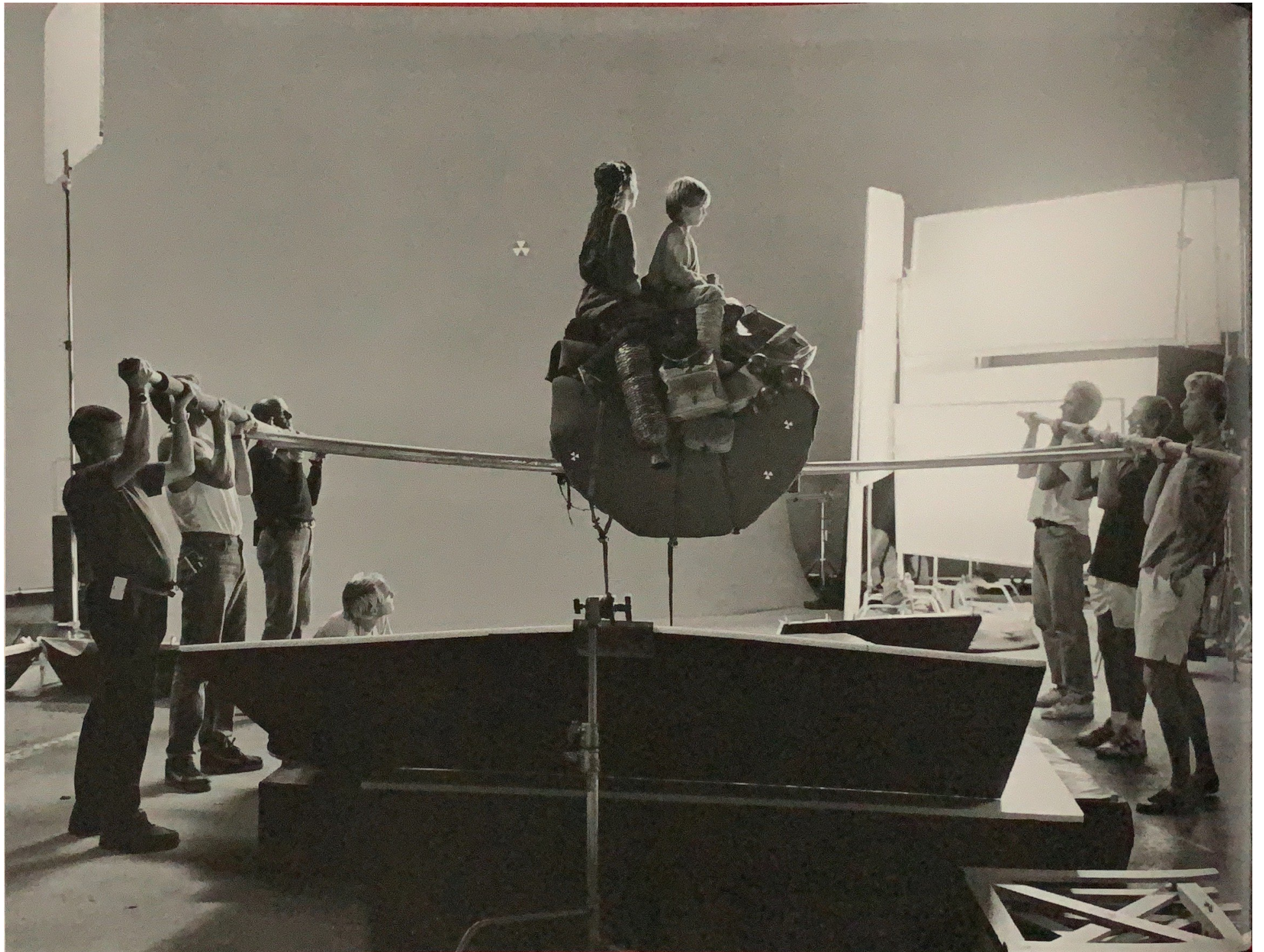


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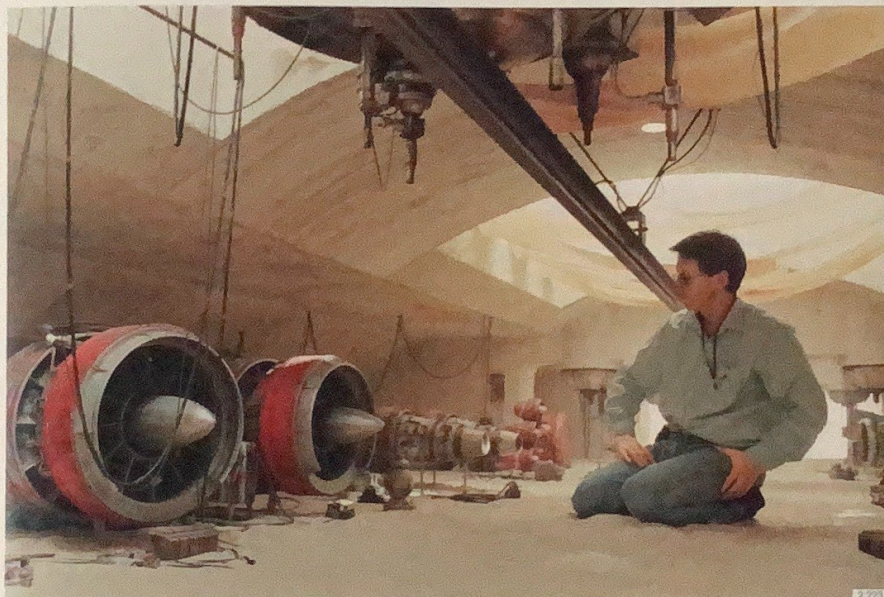
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"I am responsible for making sure that whatever George Lucas wants George Lucas gets, and that he's going to get it in the most cost-effective, efficient way. That allows us to do things our way, but without the huge, huge risks that a normal big film of this size would have. I make that happen."

Rick McCallum



2.222 Padmé and Anakin arrive at the racing arena's hangar atop an eopie. Natalie Portman and Jake Lloyd are filmed seated aboard a simple rig that the crew use to simulate the movement of the beast of burden. The creature is added in the post-production process.

2.223 Inspecting the arena pit hangar scale model, which was constructed following the main shoot. During the editing process Lucas decided that he wanted a larger, more elaborate hangar and this was built to extend the original set that had been used during production.

2.224 In a scene inside the racing arena hangar Kiltster reveals that Anakin has never finished a race, let alone won one. Qui-Gon expresses his belief in Anakin.

2.225 Final frame as Anakin and Padmé, Shmi and Kiltster arrive at the hangar.

2.226 Jake Lloyd listens intently to George Lucas. Lucas: "Whenever you're working with children, it's a more difficult situation. There are many different ways you can approach a child actor, and they all work differently. You work with them to see where their strengths and their weaknesses are in terms of the way they work and the way they like to work."

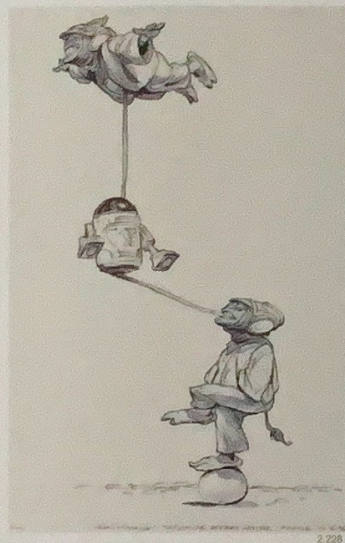




Tony
7-6-95
(crash scene - To Tonia)

“What you see in the movies is the teeniest, tiniest tip of the iceberg of wildlife that exists in the Star Wars universe. The ecology for Tatooine is all thought out, everything. There are predators, plants, insects. The food chain is there. Biology is there. It’s a Noah’s Ark.”

Terryll Whillatch



2.228

2.227 Terryll Whillatch concept artwork, dated July 6, 1995, depicting a variety of Tatooine denizens on their way to the podrace. The creature landing pods she had devised can be seen in the background.

2.228 Iain McCaig's concept (December 15, 1995) shows a creature/droid balancing act to entertain the podrace spectators.

2.229 Another Tatooine crowd concept from Terryll Whillatch (July 6, 1995). The crowd have purchased tickets and brought food with them to ensure they have a thoroughly enjoyable time at the podrace.



Terryll Whillatch
7-6-95
Amphibious alien
vehicles

2.229



"The stands were filled with colored Q-tips to provide a reasonable crowd texture for very blurred or distant shots, but most of the shots inside the stadium were populated with live-action extras shot in groups on digital video."

John Knoll / Visual Effects Supervisor



Natalie Portman It got really hot. We'd start shooting as soon as the sun rose, so pickup was before 4 a.m., and we were shooting before 6 a.m. At 1 p.m. it was 130 degrees, so we fried an egg on R2-D2.

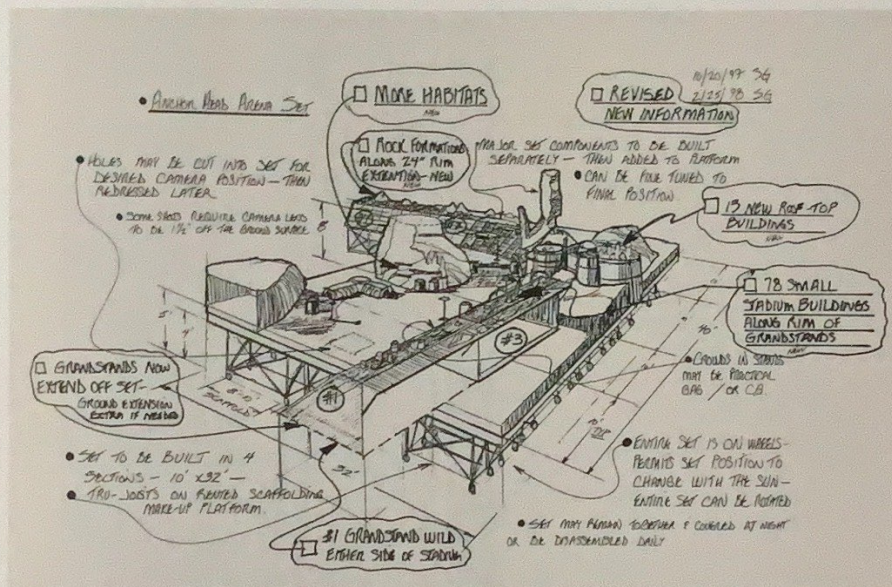
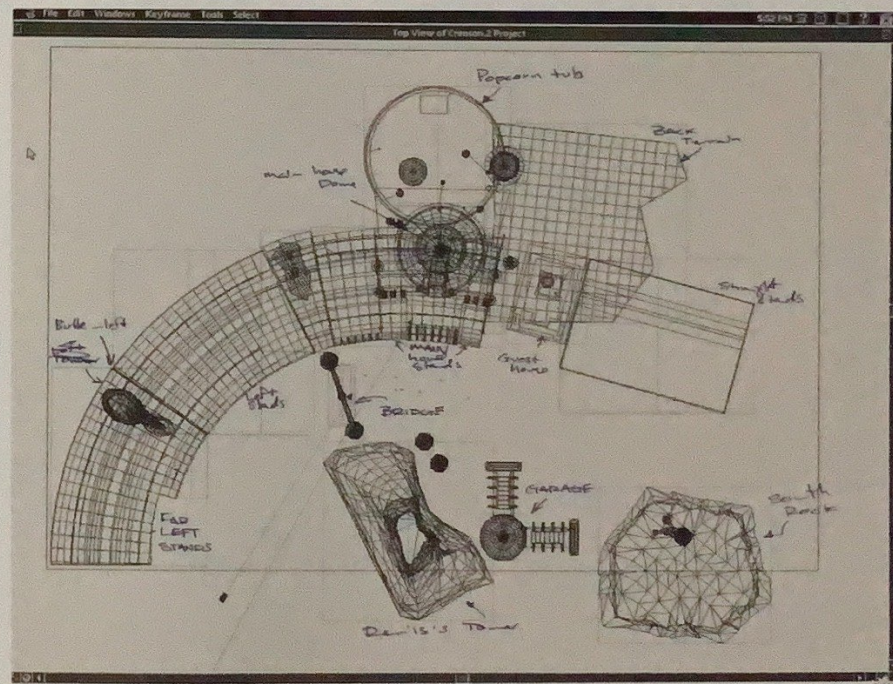
David Tattersall The temperatures were quite scary, photographically speaking, especially on the days when they got over 130 degrees. My main concern was whether the film would actually melt in the camera. We'd tested the cameras during prep in Arri Media's climate-controlled box, letting them run for a day, but only at 120 degrees.

On the set, we had a routine in which the film was kept in an air-conditioned storage truck and then very gradually brought up to temperature by transferring the cans into different vehicles kept at different temperatures. We hoped

that would prevent condensation, warping, or whatever. Then, after exposure, the footage was quickly brought back to a reasonable temperature.

Liam Neeson You had to watch yourself and drink a lot of Gatorade. But George never changed his costume at all. From England to Tunisia he wore the same jeans and checked shirt and baseball cap. So I thought, I'm not going to complain if he's dressed in jeans.

George Lucas The heat was draining. I tried to be conscious of how everyone was holding up, especially Jake. He would never tell me if he was having a problem, so I'd check with his mother, and there were a few times when he really needed a rest. But as difficult as it was, Tunisia looks like Tatooine, so it must be Star Wars!



2.230 It is easier to create a physical model than to build and render a detailed CG version, so the Anchorhead Arena (later renamed the Mos Espa Grand Arena) model was built. The entire 40 x 32-foot model was constructed on wheels that allowed it to be shot with various shadow angles.

2.231 There were 90 arena shots, of which 70 were static. However, some, like this final frame, required a flyover with a motion control camera.

2.232 The requirements of the model changed over time. This detailed set drawing of the Anchorhead Arena was originated by Steve Gucley on October 20, 1997, and then revised on February 25, 1998.

2.233 This CG version of Anchorhead Arena was useful both for the animators, and for providing a setting for CG people. John Knoll: "In a handful of shots, computer-generated people were used. Motion captured walk and stair climbing cycles were applied to low-resolution CG humans, and replicated into thousands of 'extras,' each with a series of behavior rules that prevented them from bumping into each other or obstacles or doing other undesirable actions."

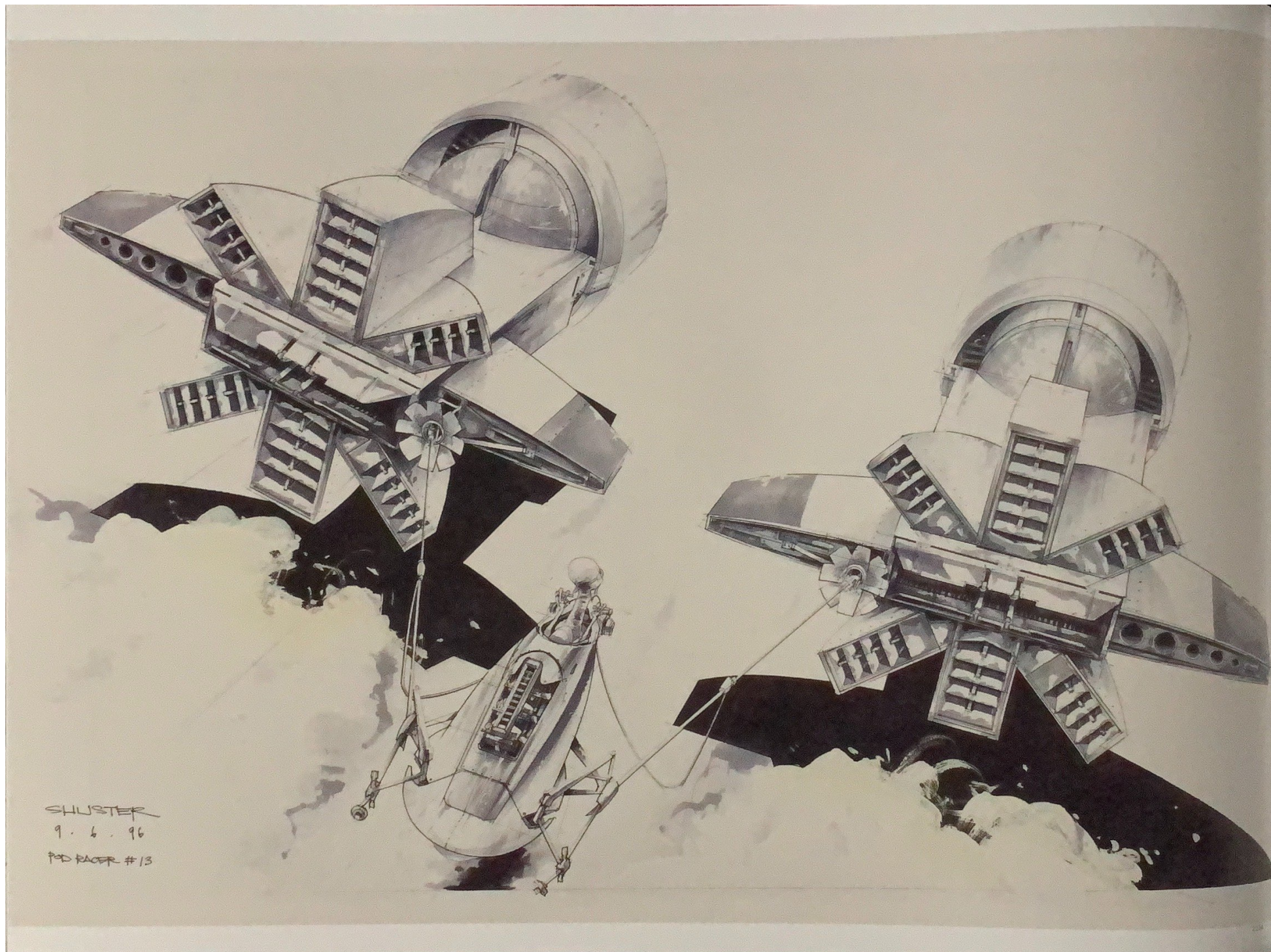
vestibule with a huge picture window at one end, so we dressed and changed a few things, added a few columns, and made that into the queen's throne room.

From July 22, the main and second units worked for four days to complete all the necessary scenes.

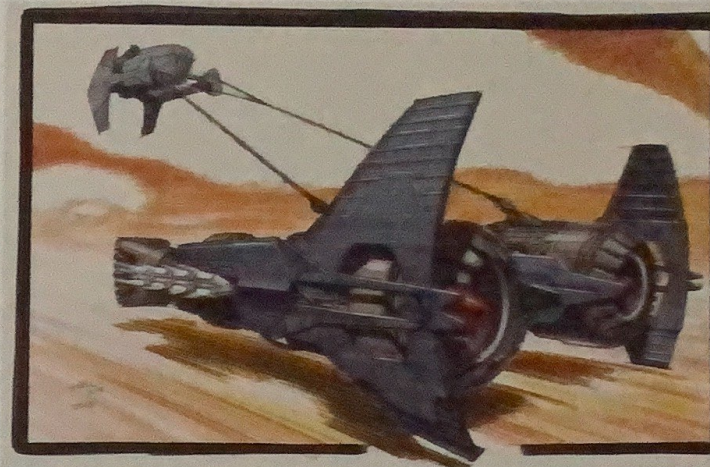
July 29, 1997

Rick McCallum It took us about three and a half months to build the 18 podrace engines that we sent to Tunisia. It's like moving a small platoon across a desert.

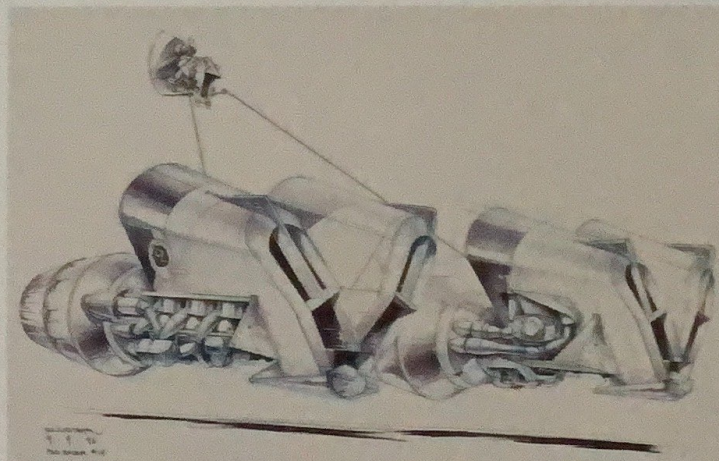
The podrace engines, which were made from surplus military airplane parts, arrived in Tozeur, Tunisia, on July 17, while the main unit arrived from Naples on July 26. The first scenes to be shot in Chott el Gharsa were the Mos Espa market scenes on July 28-29.



SHUSTER
9. 6. 96
POD RACER #13



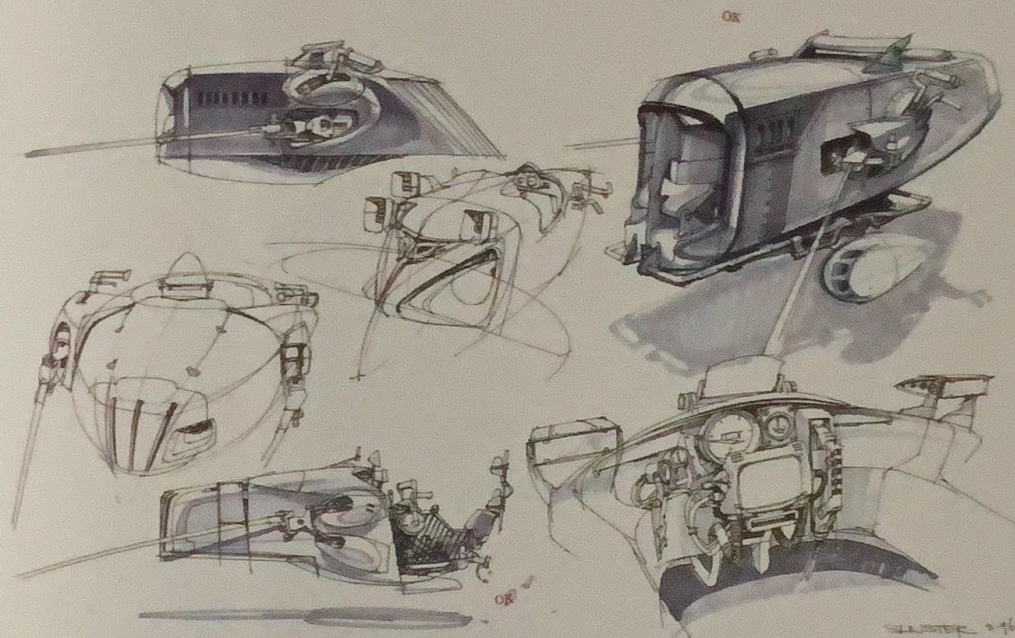
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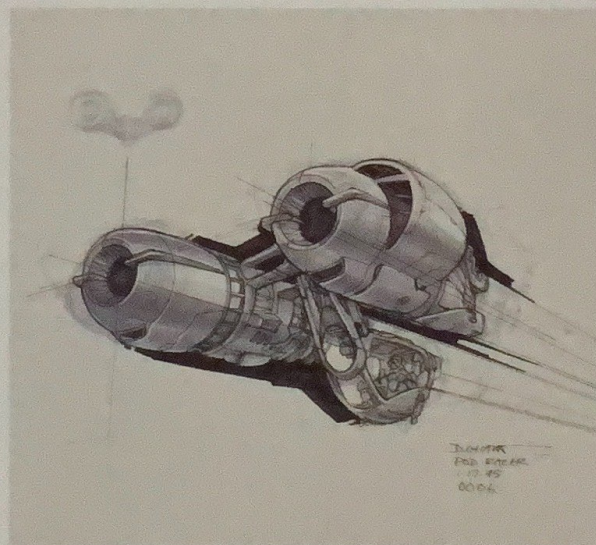
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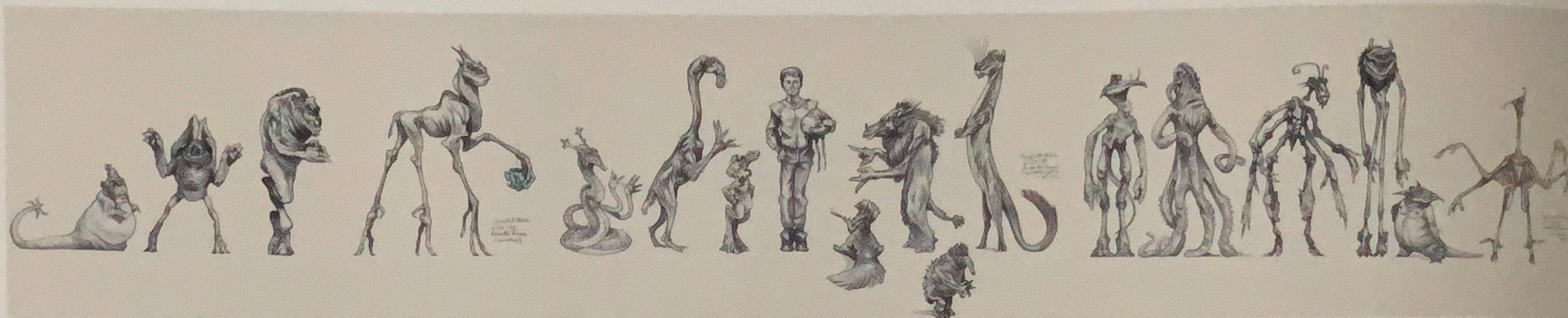


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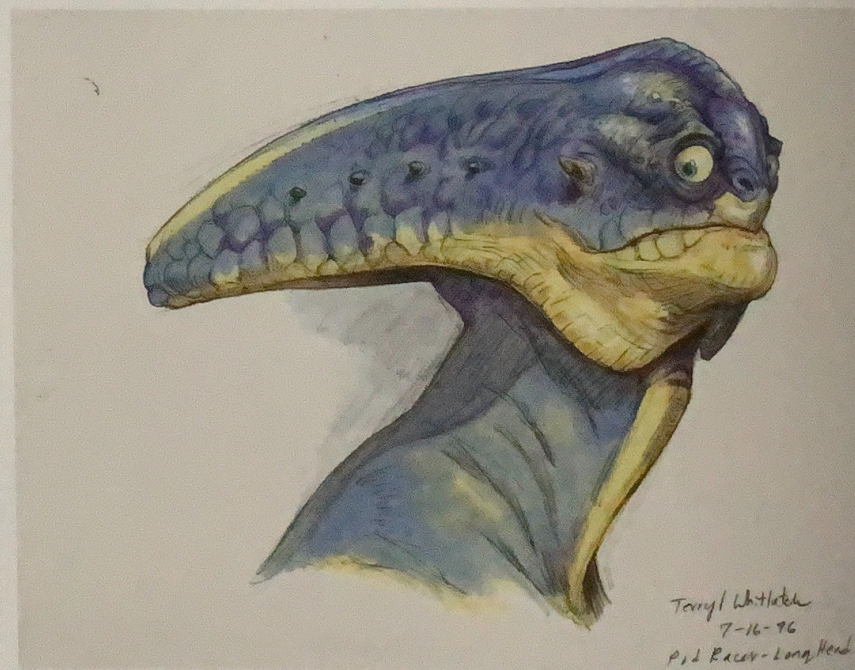
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- 2.234 Jay Shuster's concept for a pod racer (September 6, 1996) became Mox Goo's pod racer. George Lucas: "I love Ben-Hur—the chariot race is one of the best action sequences ever shot—so I thought, 'Maybe we could make a space version of Ben-Hur and have podracers instead of chariots.'"
- 2.235 Various ideas for pod chariots by Shuster (March 1996).
- 2.236 John Bell's October 1995 concept is dark and menacing.
- 2.237 For this very early idea (January 17, 1995), Doug Chiang had the chariot fixed to the engines.
- 2.238 Shuster's concept #14 (September 9, 1996) shows how the artists experimented with the relative sizes of the engines, chariots, and the cables connecting them. The engines were rotated and became Sebulla's engines.
- 2.239 David Duzoretz designed and created CG versions of the podracers for use in the animatics. This becomes Nera Kee's pod racer.



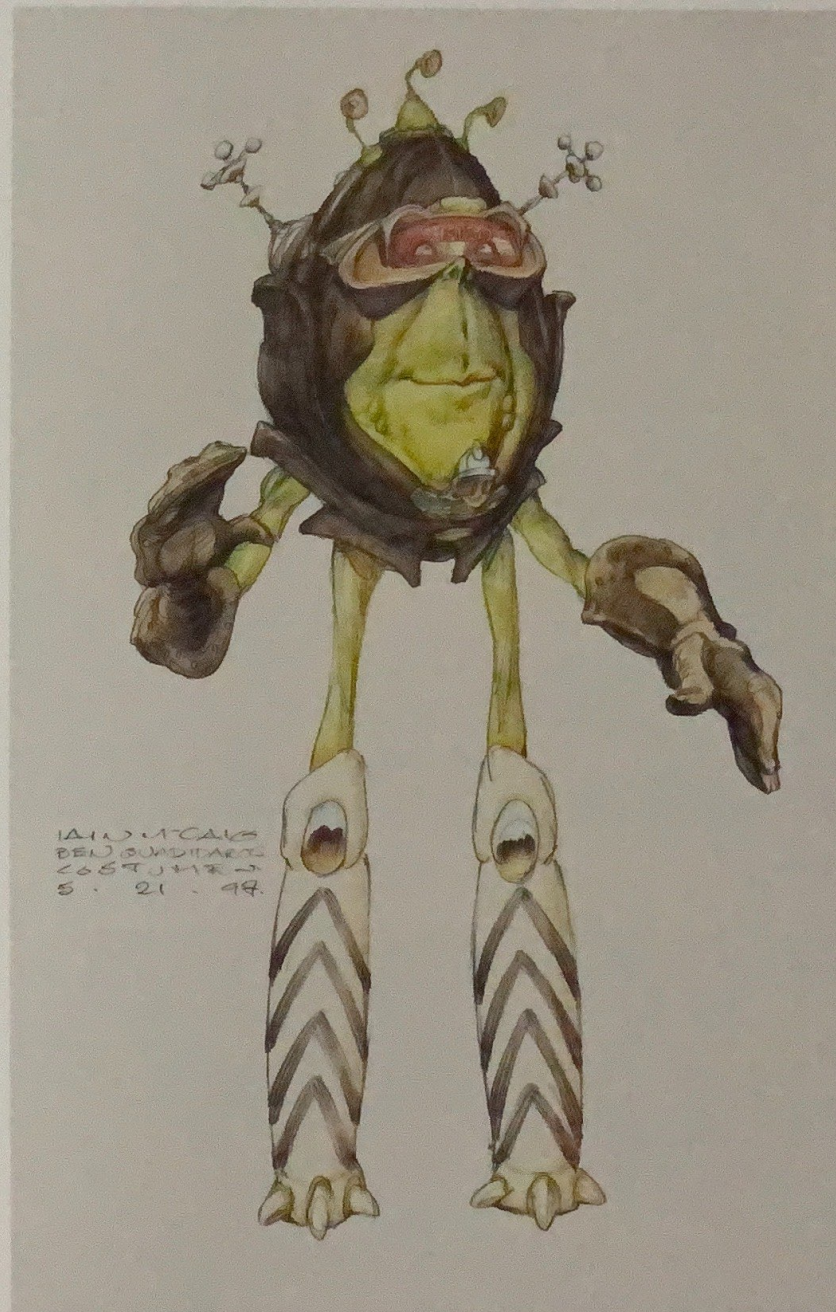
2.240-242 Terry Whitlatch designed many alien pilots for the podrace and then lined them all up on June 26 and 27, 1996, to show their relative sizes. Whitlatch: "George originally had at least 13 podracers. The only limitation being they had to be small and light. Anything went. And so I developed a lot of different creatures and there's probably, for every creature that he approved, there were at least three ideas not. I thought about all different types of animals and I went from gazelle, to things that looked like Mr. Potato Head on stilts, to little dinosaurs, to mouse. We even have a kind of a spoof on aliens with these big eyes. The whole animal kingdom is in there."

- 2.243 This Whitlatch podracer design (July 19, 1996) becomes Boles Roor.
- 2.244 A July 16, 1996, podracer idea by Whitlatch becomes Ratts Tyerell.
- 2.245 This Whitlatch podracer concept (September 10, 1996) earned a "Fabuloso" stamp from George Lucas and became podracer Ebe Endocott.
- 2.246 Iain McCaig's costume design for Ben Quadinaros (May 21, 1997).

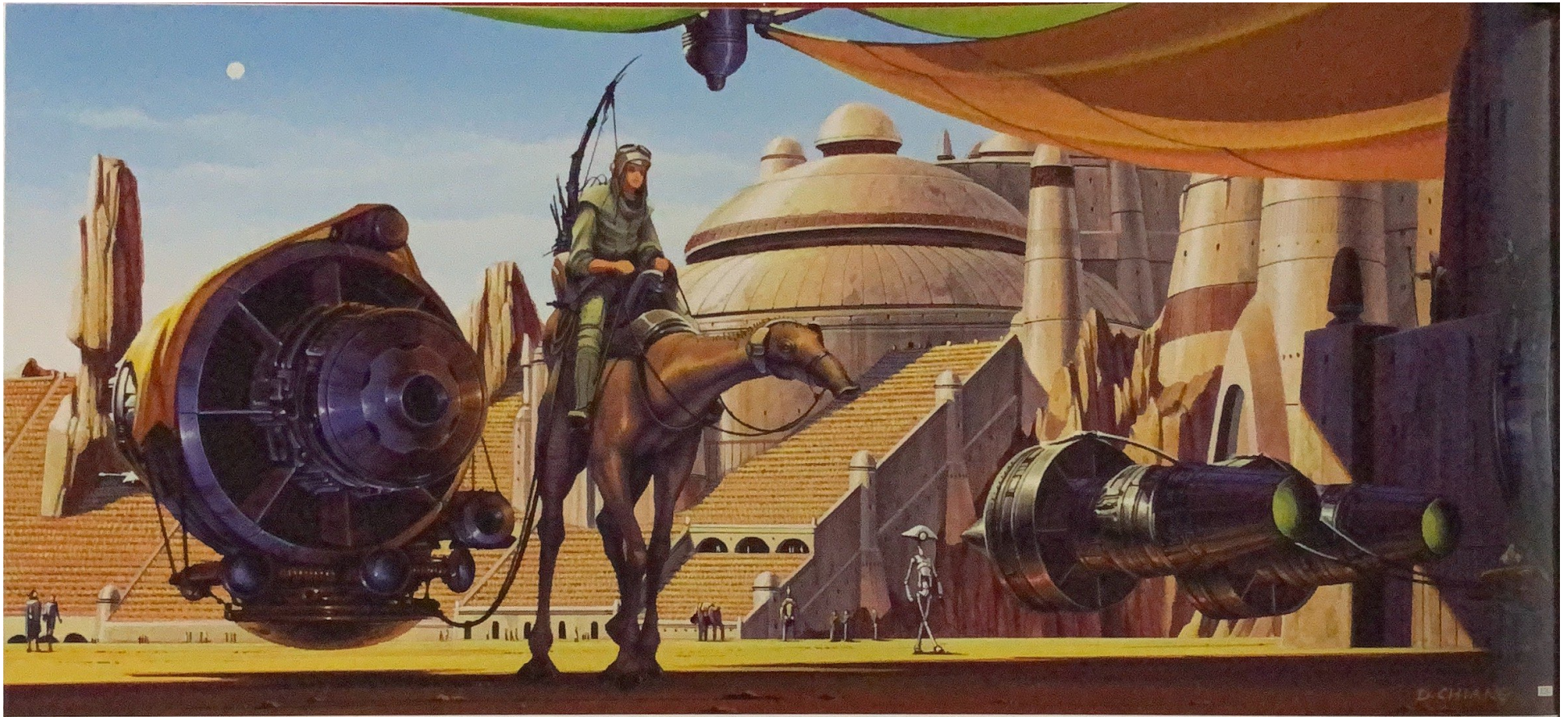




2.246



2.246



"The podracers and the creatures were developed independently. We lined up all the creatures and we lined up all the pods, and George picked what creature went into which pod. It was uncanny how the creatures matched the pods. He's a wonderful editor and is able to see what goes together well. All the creatures matched the pods; the personality and everything."

Terryf Whillatch



2.250

2.247 Doug Chiang's concept painting shows copies transporting the pod engines into "Anchorhead Arena" (June 12, 1996, 4.5 days).

2.248 A computer graphic detailing the names and starting positions of all 23 racers, although only 15 made it into the final film.

2.249 Final frame of pods in their starting positions just before the race commences.

2.250 Shmi tells Anakin to be safe. This was shot in Tunisia with life-size engines and cockpits.

2.251 On July 30, 1997, George Lucas and Rick McCallum assess the extensive damage to Anakin's pod engines following the storm in Tunisia the previous night.

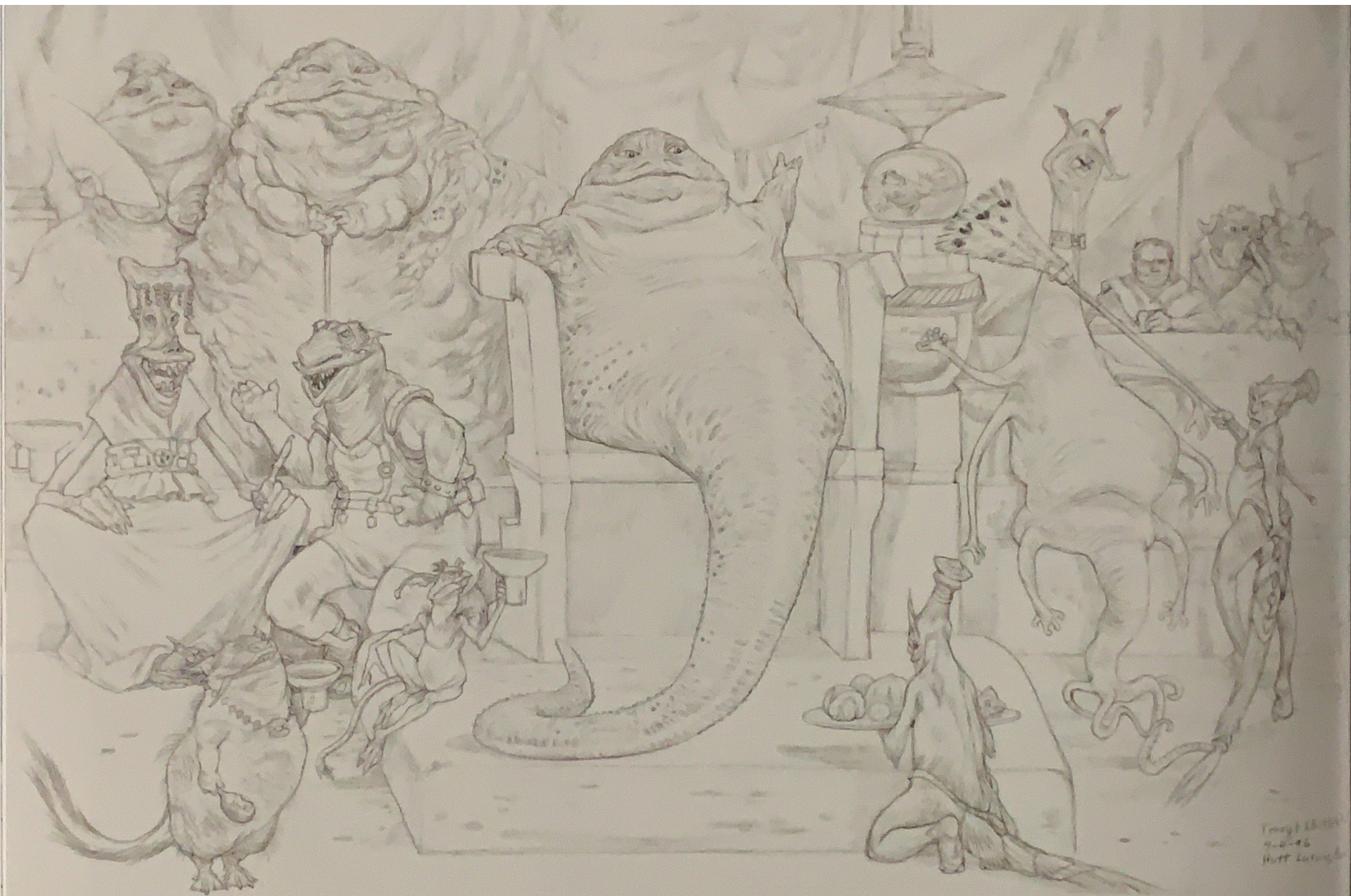
2.252 The pods are in their starting positions as the flaggers move onto the track. Anakin is announced as a late entry to the race. The scene was originally much longer but the introductions to the racers were cut due to running time constraints.



2.251



2.252



2.253 Terry Whitlatch's concept art for the royal box (April 4, 1996) includes a younger and slimmer Jabba the Hutt, as well as two additional Hutts. Whitlatch: "They were either parents or relatives of Jabba. There was a big, old, terrible, awful-looking Hutt, and then there was Gardulla, who was female. I'm not sure about her personality other than she's probably not too nice, like most of the Hutts. She's probably rather mercenary: 'I'll get as much stuff as I can and whoever dies in the process is fine with me.' That's what I've designed in her."

2.254 Lucas inspects the maquette of Jabba in the royal box.

2.255 Final shot of the royal box, complete with Jabba (credited as himself) and his entourage: Diva Fungita (Amanda Lucas), Bib Fortuna (Matthew Wood), and Diva Shaltqua (Bianca Warren).

2.256 Jahn McElwig's storyboard shows Jabba starting the race—by splitting the head of a small amphibian at a gong.

Nick Dudman / Creature Effects Supervisor George is spending a huge amount of money and no one, I'm sure, is more aware than he is what is riding on it. He is eminently pragmatic. If you say to him, well, the guys will only be able to wear that for four minutes in the Sahara, unless we spend a fortune on running frozen glycol around their bodies with some cool suits, he says, "Okay, get the cool suits."

Ahmed Best On July 29, I was eating dinner with Ewan and George and we saw lightning streak across the sky. I turned to Ewan, and since we were in the desert I said, "Wouldn't it be crazy if it rained?" Well, it was a torrential downpour. George was freaking out.

Addendum to Progress Report No. 24 / July 30, 1997

At approximately 20:00 on the night of July 29 a severe desert storm hit the Tozeur area. This storm consisting of thunder, lightning, rain, and sand with winds of between



2.255



2.254

70 and 100 miles per hour which affected Tozeur town; some 40 kilometers from the Chott el Gharsa locations. After a production meeting on the evening of the 29th it was decided to send a small advance party out to the location at 02:30 on the 30th to check access to the site across the desert roads and assess any damage done to sets and location facilities. At 03:00 the advance party found that access to the location was possible despite some water logging on the access roads.

MOS ESPA STREET SET: Two buildings completely destroyed. Almost all other buildings sand and water blasted removing paint and plaster finish. All props either destroyed, knocked over or damaged. Luke's speeder moved some 50 meters. Street set impossible to shoot on until major repairs undertaken.

WATTO'S BACK YARD: One two-ton scrap metal piece thrown 50 meters. Impossible to shoot on.

ARENA VIEWING PLATFORM: Complete set picked up and thrown some 100 meters. Damage done to control panels and other parts of the set. Shooting not possible.

ARENA GRID AND POD ENGINES AND COCKPITS: Severe damage to these pod cockpits and engines. Anakin's engines smashed and broken in two. All other engines suffering some degree of damage from almost complete destruction to various parts ripped off or smashed in wind. Notably one two-ton engine picked up and hurled some 75 meters. Internal damage to scaffold "chassis" of engines, wheels and scaffold supports bent

or smashed. All pod cockpits suffering a degree of damage ranging from all but total destruction to water and sand damage. Shooting impossible without major work refitting and repairs. It should be noted that these pods and engines were constructed and fitted in the UK by both props and construction departments over a five-month period. Extremely complex structures.



2.256



- 2.257 Ben Burtt, as Anakin Skywalker, in an animatic of the podrace developed before shooting commenced. Ben Burtt combined footage from a variety of sources including computer-generated animatics, a Sebulba hand puppet, and shots of his son inside the cockpit.
- 2.258 Robert E. Barnes's map, which expands on a map designed by Doug Chiang, depicting the route—and challenging terrain—of the Boonta Eve Podrace (June 12, 1996).
- 2.259 Filming Jake Lloyd in the cockpit, which sits on a gimbal that the crew moves to simulate its motion.
- 2.260 Doug Chiang's concept artwork shows one of the more dangerous vantage points for spectators of the podrace (March 6, 1996).
- 2.261 A computer graphic render of the podrace to test the appearance of the engine flames.
- 2.262 This concept art by Doug Chiang (January 30, 1996) is one of a series made to determine the intensity of the power coupling between the pod engines.



"Animatics started out as a conceptual thing. 'Let's put a racer in action; let's see it in a shot.' Then it became, 'We've got the storyboards for the podrace; let's make an animatic and cut the entire thing together.' We had at one point a 22-minute version of the race—that was too much, so George pared it down."

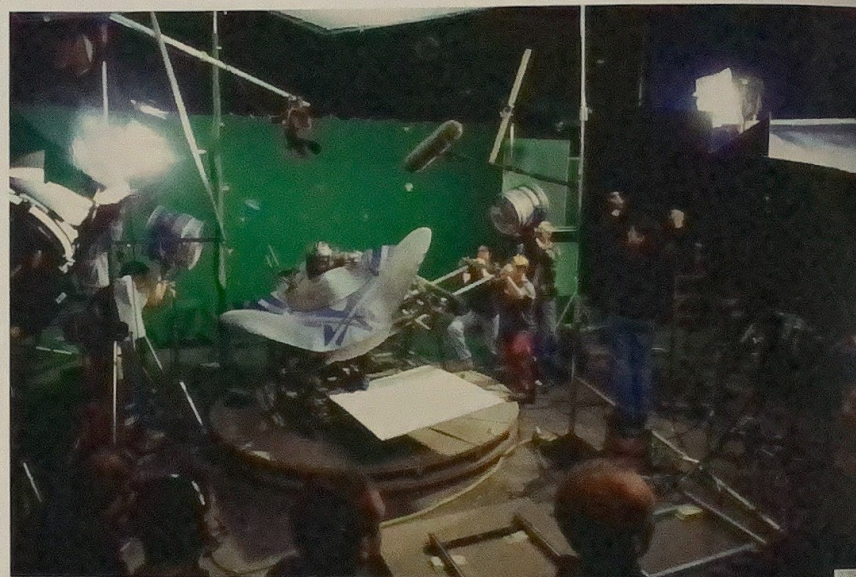
David Dozoretz / Previsualization Effects Supervisor

FACILITIES AND UNIT BASE: Three large marquee tents used by Creatures, Costume, Makeup/Hair, and Crowd Changing flattened and ripped apart.

COSTUME: All costumes stored in large marquees soaked and covered in sand. Crowd calls impossible without major work to dry and clean costumes. Long-term damage to costumes still to be ascertained. Principal's costumes stored on the Wardrobe Bus undamaged and enable shooting on July 30.

ACTION UNDERTAKEN:

1. Tunisia shoot rescheduled to allow immediate shooting on Naboo Spacecraft Ramp and subsequent days scheduled to allow repair work to be undertaken



where possible. Damage to props and sets may not be completely repaired with time allowing and may necessitate further UK shooting or CG work.

2. Additional labor, craftsmen, and materials brought in from UK, Tunis, and Medenine to allow immediate repairs to all damaged sets.

3. UK props and construction labor about to return to UK kept in Tunisia to allow repairs.

4. New facilities such as tents and catering equipment, fridges etc. hired in from Tunisia.

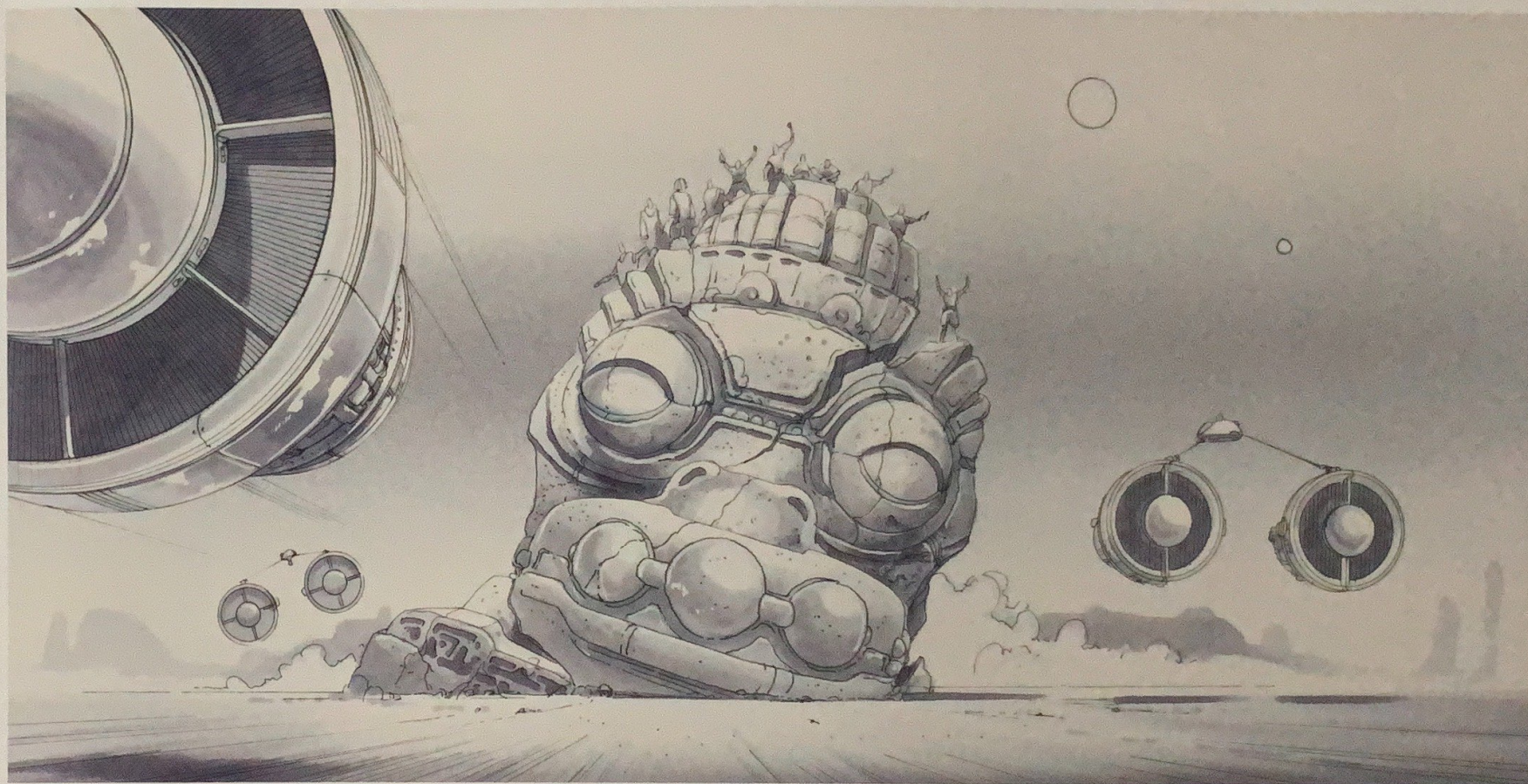
5. Governor of Tozeur province contacted and visits site. Military assistance and tents given by Tunisian authorities.

George Lucas I had been through the same experience on the first *Star Wars*—it was as if the storm had hidden away for 20 years, just waiting to come back.

Rick McCallum Luckily we had this one set, the Naboo Spacecraft Ramp, that we could still continue to shoot on, pushing the podrace to the very end of the schedule.

On July 30, the production shot scene 60 (Qui-Gon et al. leaving the spacecraft on the way to Mos Espa), 66 (Obi-Wan on the comlink to Qui-Gon), 103 (probe droid's POV of Obi-Wan loading the ship while Qui-Gon goes back to Mos Espa). The following day was devoted to shooting the first fight scene between Qui-Gon and Darth Maul at the same location.

Liam Neeson Stunt coordinator Nick Gillard worked out a series of parries and attacks. Ray Park and I really rehearsed that scene so we could have literally done it in our sleep. If we got our lightsabers caught up in our cloaks, George would always just reshoot. We covered it with up to three cameras, though, and we did each setup in two or three takes.



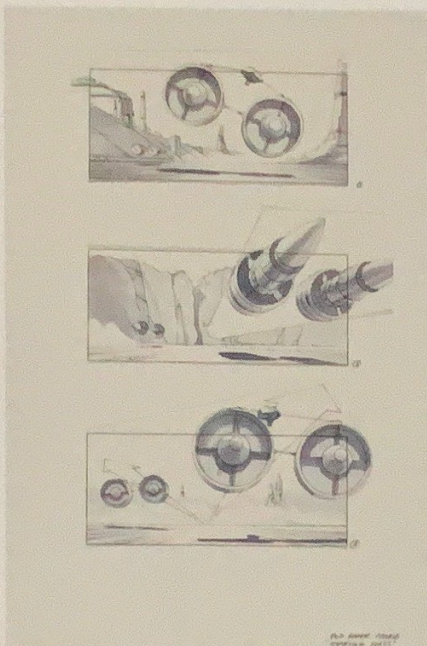
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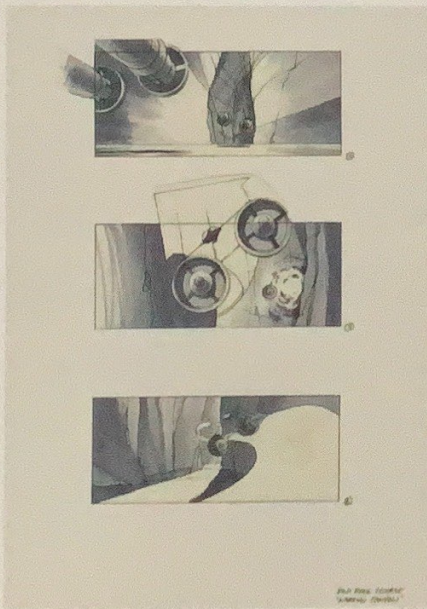
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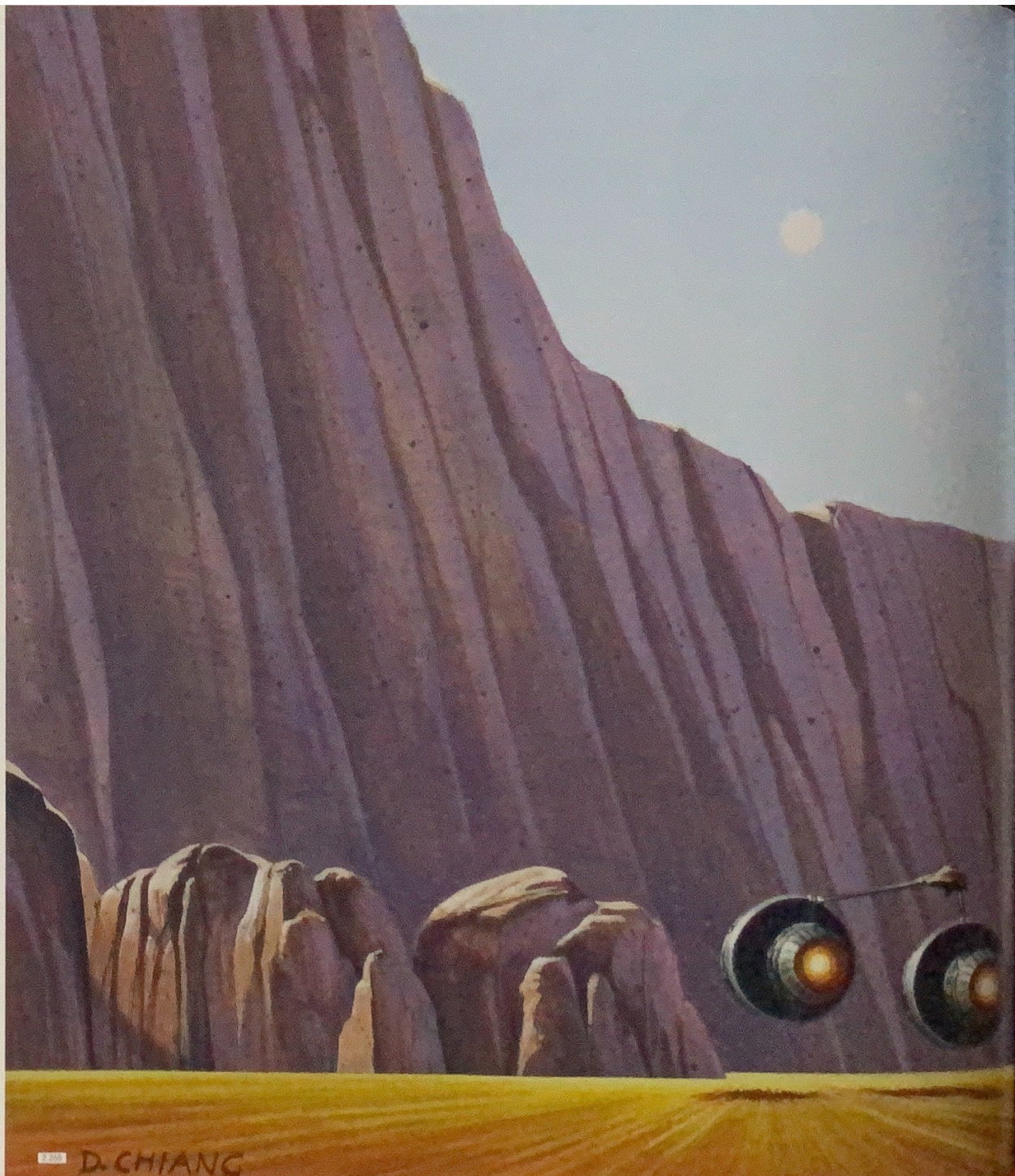
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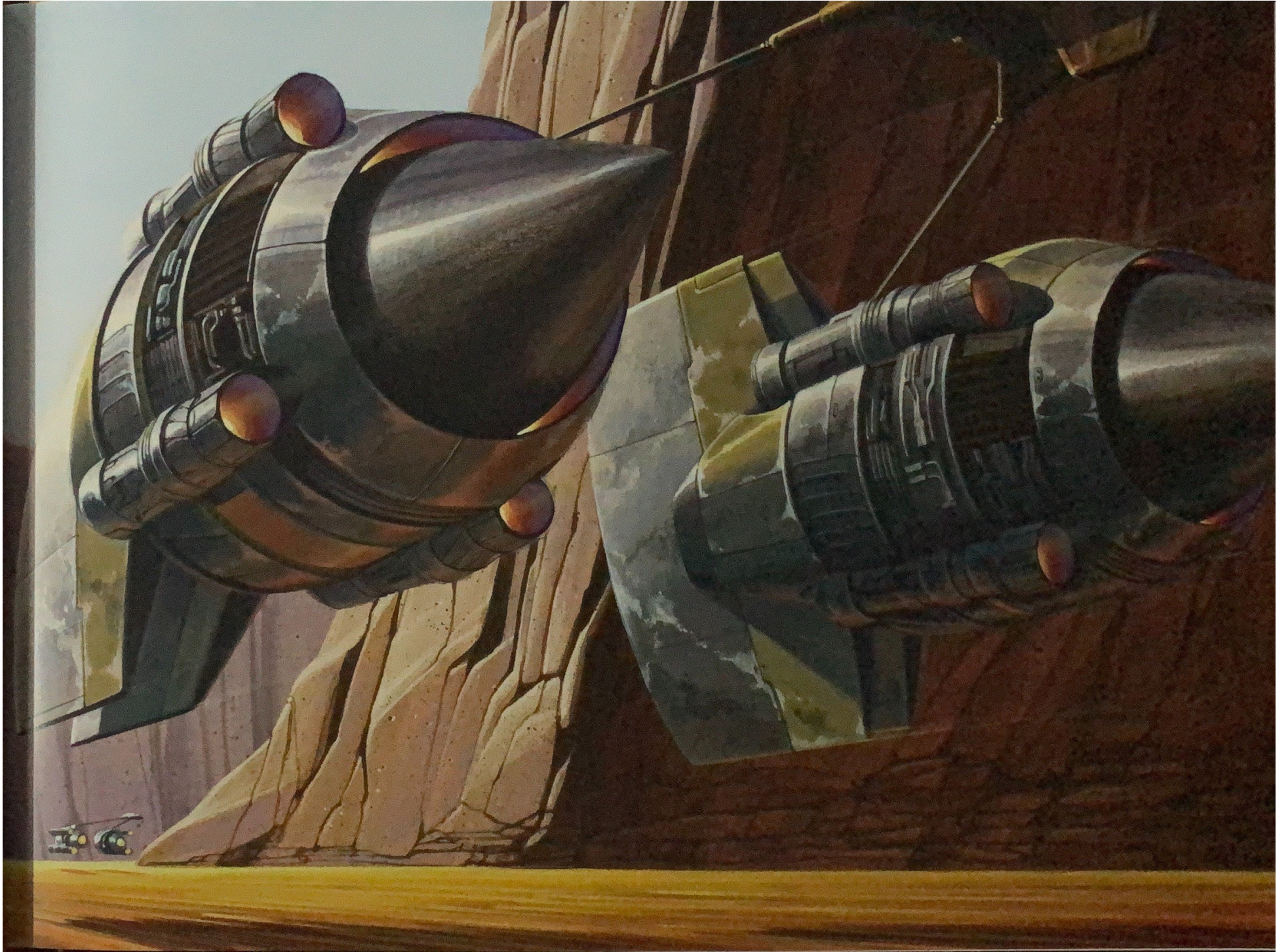


2.263



2.264







They completed 33 setups for the scene. Meanwhile, Pernilla August and Andy Secombe (playing Watto) arrived in Tozeur earlier than scheduled so that their scenes could be filmed while repair work was being undertaken.

Rick McCallum We would literally finish painting a set, and immediately bring in the actors to start filming. In a couple of scenes, Natalie walked in and realized that her shoes were stuck to the paint.

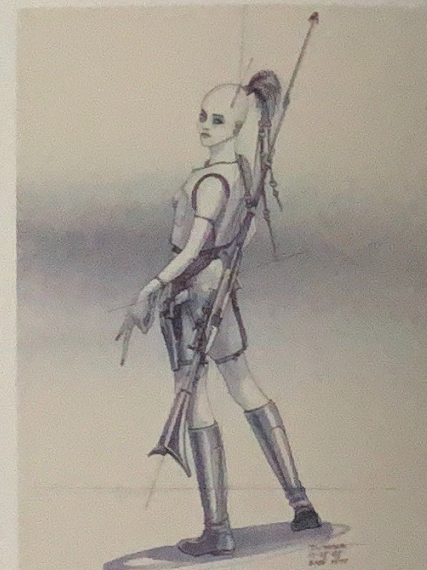
The Arena Starting Grid scene was shot on August 5-6.

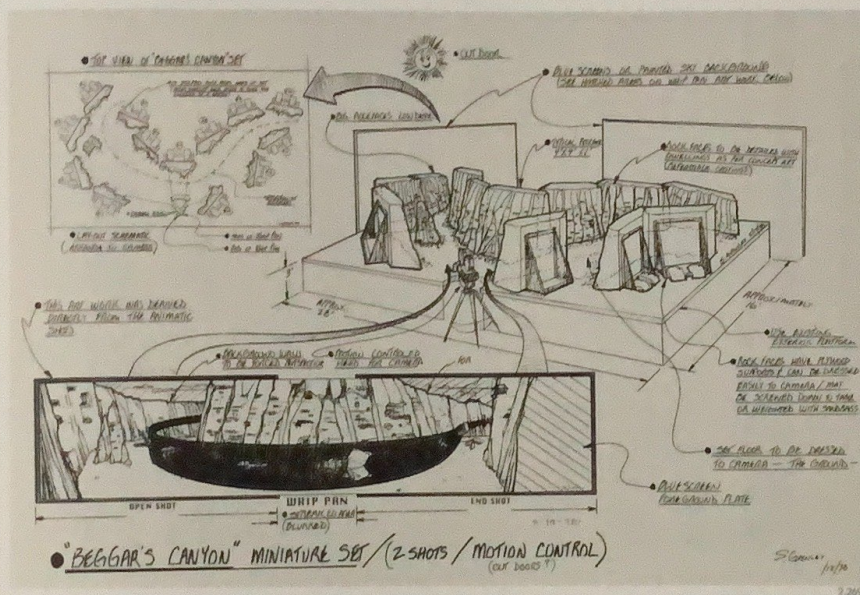
Rick McCallum I volunteered to shoot a wide shot from a crane. One of the things that I could see that was so wonderful was not only all of our pods rebuilt but beyond that sand dune was our whole base camp, which had been completely rebuilt and to see it all working, seeing the second unit about a half a mile away actually shooting, seeing the first unit prepping for our biggest scene in the movie, it was a joy.

Progress Report No. 31 / August 7, 1997

Main unit completed call sheet as scheduled. The unit will now move to Medenine and Tataouine, southern Tunisia, for the remainder of Tunisian shoot.

The slave quarters scenes were shot at Ksar Ouled Soltane, a fortified granary, in the Tataouine district, for two days beginning





2.269

August 9. They completed scenes 71 (Anakin bringing Qui-Gon and the others back to his home during a sandstorm), 88 (a probe droid patrolling the area), and 104 (Qui-Gon breaking up a fight between Anakin and Greedo, who has accused him of cheating in the podrace).

In the scene Wald (Warwick Davis) notes, "Keep this up Greedo, and you're going to come to a bad end."

George Lucas The scene with Greedo is not about controlling your anger as much as it is placing your anger in the right place. I think it's an essay on the judicial use of your power.

The scene would eventually be cut from the theatrical version of the film, although it was included on the home video release.

Rick McCallum I was very disappointed about losing the scene. I felt it showed a little bit of the dark side of Anakin.

George Lucas It does show that Anakin has a temper, that he does get in fights. In the long run of the movie I didn't think it was essential to establishing his character one way or the other.

Scene 108 was also completed, where Anakin says goodbye to his mother. He promises to return and free her. The Tunisian shoot was completed the next day, and the production traveled back to the UK on August 12.

Rick McCallum Despite the storm, we never lost a beat and we walked out of Tunisia the exact day we were supposed to.

August 29, 1997

Filming resumed at Leavesden on August 13 with the completion of 13 scenes set in the cockpit of the queen's spacecraft.



2.263-264 Dong Chiang's numbered storyboards for the podrace course, with arrows to indicate the dynamism and direction of the pods, begins with the "Starting Flats" and "Narrow Canyon."

2.265 This podrace painting (January 9, 1996, 5.25 days) earned Dong Chiang a "Fubalous" from Lucas.

2.266 Lucas directs Michonne Bourlaque, who plays Auroa Sing.

2.267 Final frame of Auroa Sing watching the race from a balcony overlooking Beggar's Canyon.

2.268 Dong Chiang's artwork for bounty hunter "Babe Fett" (October 25, 1998), later renamed Auroa Sing.

2.269 Steve Gausley's model plan for Beggar's Canyon (revised May 15, 1998) was derived from the whip pan animatic shot created in preproduction.

2.270 Dong Chiang's Tatooine concept art (October 2, 1995) was later adapted for Beggar's Canyon.

2.271 Final frame of the podrace. The landscapes were created as models for enclosed terrains, whereas for open terrain matte paintings were projected onto simple shapes or miniatures.





On August 29, Samuel L. Jackson joined the cast as Jedi Master Mace Windu, and Frank Oz resumed his role as Yoda for Qui-Gon's funeral scene.

Frank Oz People always say to me, "Oh, you do the voice of Yoda," but the voice is 10 percent of the performance. I do it months later in a looping booth in half a day. I asked George, "Why don't you do him as a CG effect this time?" He said it looks more organic this way.

Like many of the returning protagonists, Yoda was significantly younger than his character in the previous films but needed to be recognizable.

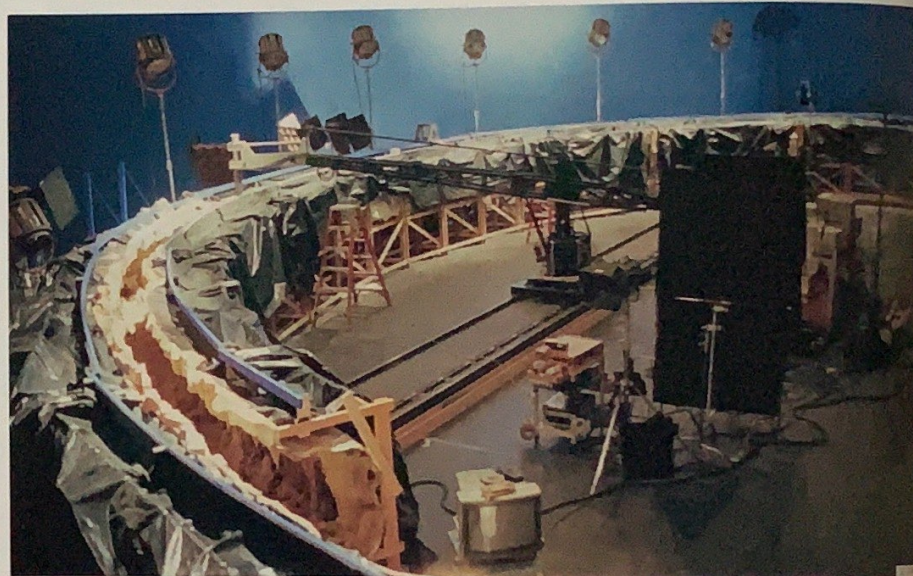
Paul Engelen/Chief Makeup Artist I wanted Yoda to be silicone because when you'd seen him before he was a very, very old refugee in hiding. There was an old, weary quality to him. This Yoda has to look the same, but there has to be a vitality to him. My feeling was that apart from putting a little more strength into his features,

if we did him in silicone we could get a much more healthy, translucent feel to him. I think that worked, but the problem with a silicone puppet is weight. It weighs a ton. If you've got that on the end of somebody's arm, they've got a problem. In fact, Frank Oz was really good about it because he agreed that it gives movement and a feeling of skin texture that is much nicer than foam.

The Jedi Council scenes were shot over the following two days, September 1–2. Qui-Gon wants to take on Anakin as his Padawan, but even though the boy passes the tests, the Council refuses because he is too old.

George Lucas Qui-Gon is an outlier, an independent soul. Even though he's a Jedi, he doesn't just go along. He's not neutral. One could say that he's, in essence, a troublemaker, because he wants to do it his way—in that case, he's me. (Laughs)

Paul Duncan What is the purpose of the Jedi? Are they a police force?

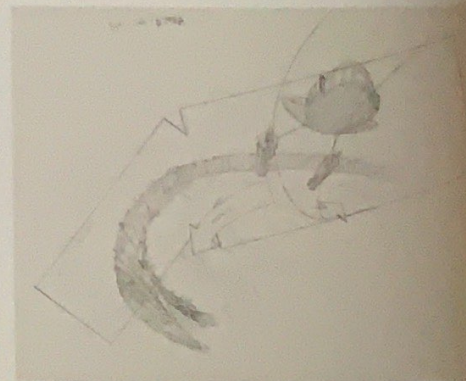


2.272 The racing course was designed to emphasize both speed and danger. Jag Crag Gorge, as shown in this final frame, was so narrow it could only be navigated with the engines at a 90-degree angle to the standard configuration.

2.273–274 A physical model was built of Jag Crag Gorge and filmed with a motion control camera. The camera rig allowed tracking and panning of the shot to get different angles within the environment. Effects director of photography Pat Sweeney and gaffer Mike O'Leary can be seen filming.

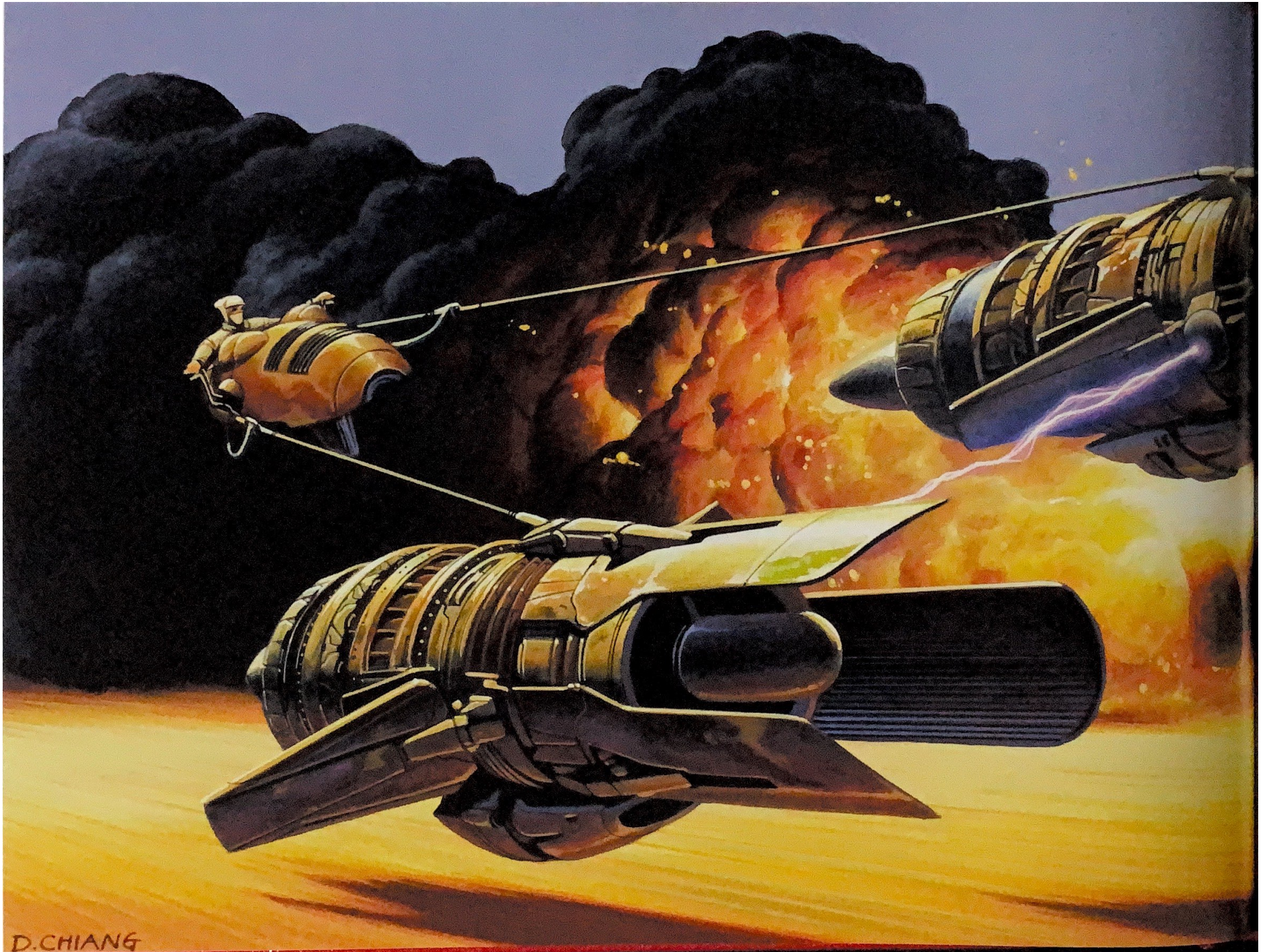
2.275 Storyboard by Brenton Jew showing Anakin's pod entering the canyon. Arrows indicate direction of movement.

2.276 Terry L. Whitlatch envisaged scavenger spectators who would feast upon the remains of unsuccessful racers (June 24, 1996).





Terryl Chittich
6-24-96
Tatouine "cayotes/hyenas"
Pod-Race sequence



D. CHIANG



145 Episode I: The Phantom Menace

2.277 Doug Chiang's concept art shows a spectacular pod crash.
 2.278 Against all the odds, Anakin wins both the race and his freedom.
 2.279-282 Inia McNiig's storyboards for an absurd idea depicting Anakin's archrival Sebulba running around after his crash with his pants on fire!



2.279



2.280



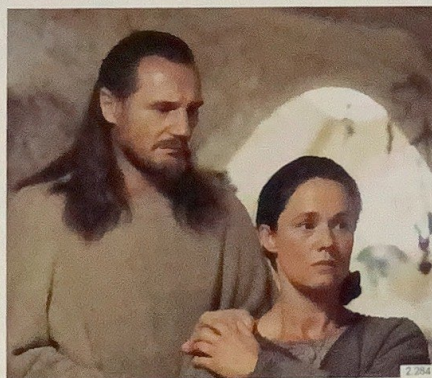
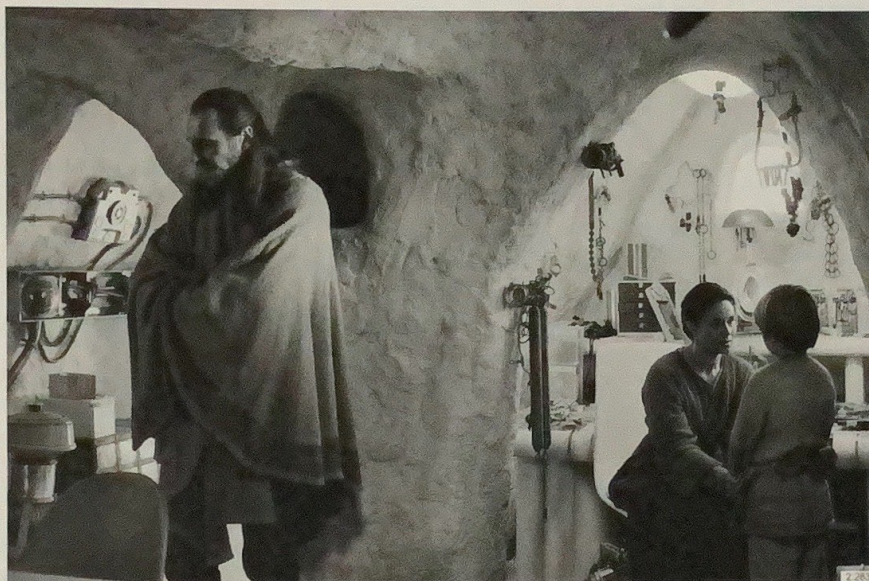
2.281



2.282

**"Now be brave, and don't look back...
don't look back."**

Shmi Skywalker



- 2.283-284 Qui-Gon has won Anakin's freedom but they must leave Shmi behind.
- 2.285 Lucas directs Lloyd and August in a scene that represents a pivotal moment in Anakin's life. Jake Lloyd: "I learned my lines, didn't care about the emotion or anything and then I went in there and did it the way I thought it was supposed to be done, and George liked it so I did it that way."
- 2.286 Anakin bids his mother farewell. George Lucas: "The core story in this first film is his fear of parting from his mother, of letting go. It's emotional and it works and hopefully you don't see it as a flaw, but as a normal reaction."
- 2.287 Lucas: "There is an emotional scene between Anakin and his mom, when he confronts the fact that he has to let go of the woman and things he cares about. His fear of losing his mother is the little chink in his armor, which the Emperor latches onto and understands, and ultimately turns Anakin to the dark side."

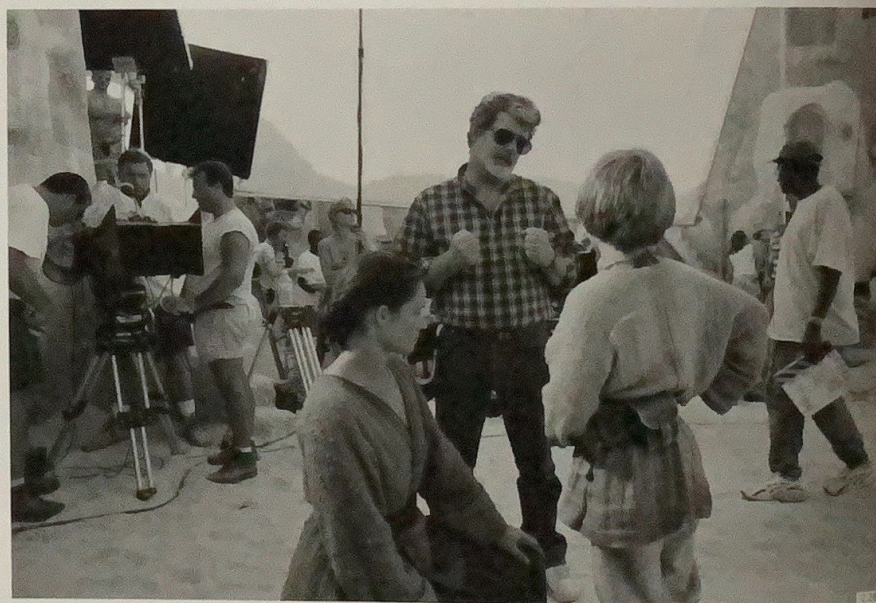
George Lucas No. They're not like cops who catch murderers. They're warrior-monks who keep peace in the universe without resorting to violence. The Trade Federation is in dispute with Naboo, so the Jedi are ambassadors who talk to both sides and convince them to resolve their differences and not go to war.

If they do have to use violence, they will, but they are diplomats at the highest level. They've got the power to send the whole force of the Republic, which is 100,000 systems, so if you don't behave they can bring you up in front of the Senate. They'll cut you off at the knees, politically.

They're like peace officers.

As the situation develops in the Clone Wars they are recruited into the army, and they become generals. They're not generals. They don't kill people. They don't fight. They're supposed to be ambassadors. There are a lot of Jedi that think that the Jedi sold out, that they should never have been in the army, but...

Paul Duncan Do you think that?







George Lucas It's a tough call. It's one of those conundrums, of which there's a bunch of in my movies. You have to think it through. Are they going to stick by their moral rules and all be killed, which makes it irrelevant, or do they help save the Republic? They have good intentions, but they have been manipulated, which was their downfall.

Both Jackson and Oz were scripted to say Star Wars' most famous line, "May the Force be with you."

Samuel L. Jackson I had a big grin on my face every single time I had to say it. I actually started laughing uproariously... I had to wipe the smile off my face because George Lucas was getting really annoyed.

September 9, 1997

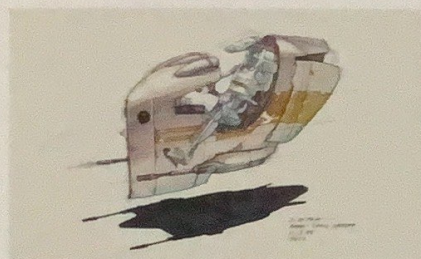
Doug Chiang One day we were storyboarding, and George said, "Darth Maul pulls out a double-edged lightsaber." I said, "Really? Cool!"

George Lucas I was looking for a kind of sword fighting that was reminiscent of what had been done in the previous films but also something that was more energized. Up to this point, we had never actually seen a real Jedi in action. We'd seen an old man, a young boy, and a character that was half droid, half man, but we'd never seen a Jedi in his prime.

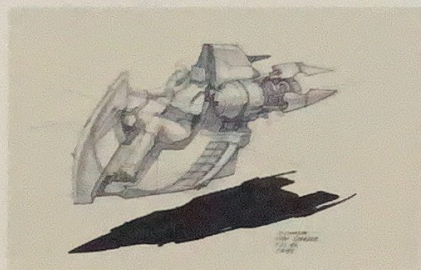


“For Darth Maul’s speeder we needed a very small motorcycle. That crescent shape evolved from another design that I initially developed for the battle droids. George remembered that design and said, ‘Here, just use it for Maul’s speeder.’”

Doug Chiang



2.290



2.291

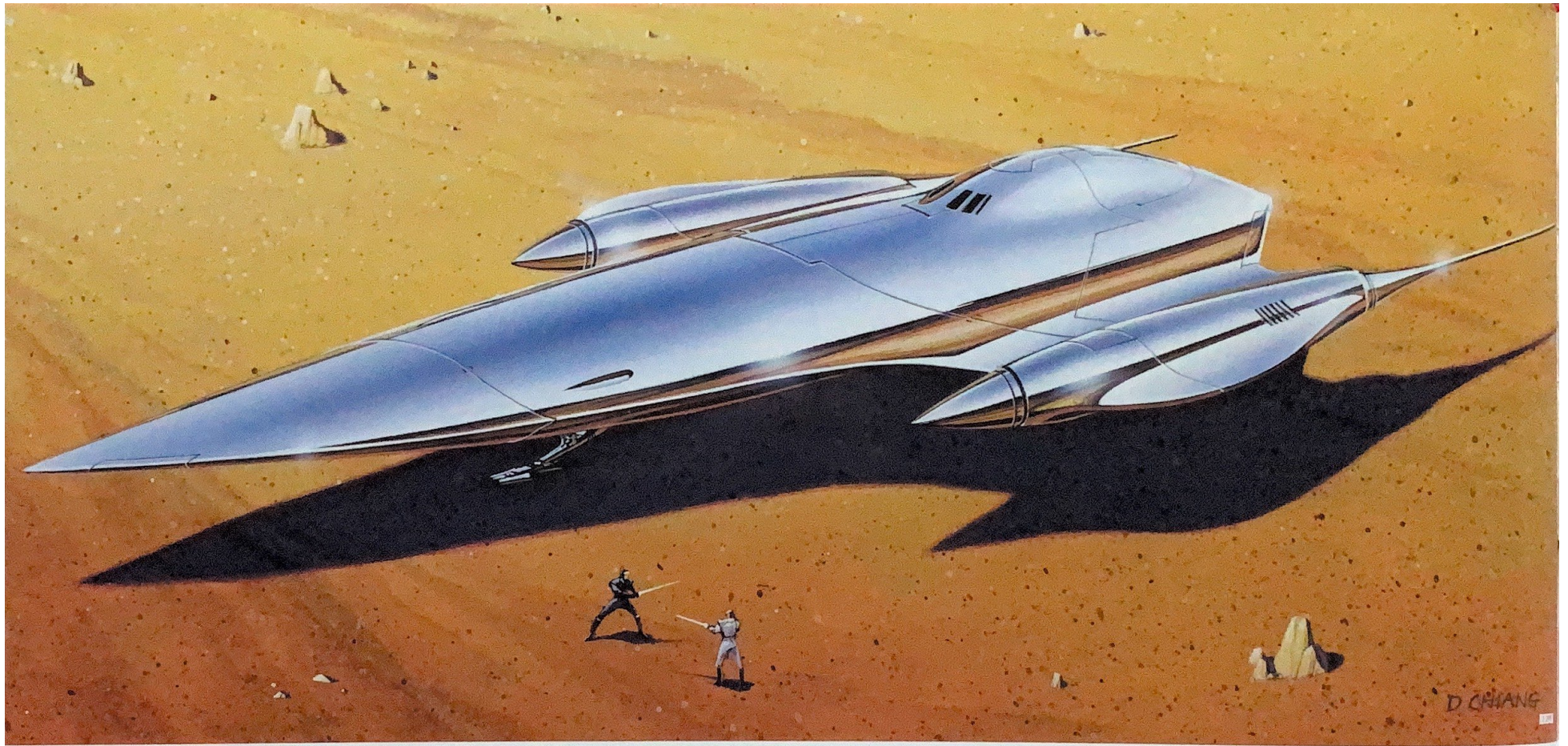


2.292

- 2.288 In a deleted scene, Qui-Gon and Anakin are leaving Mos Espa when they realize they have been discovered by a probe droid. Qui-Gon uses his lightsaber to slice the probe in two, pictured on the ground, and then they run for the ship.
- 2.289 Jira gives Anakin a farewell hug and tells him that there isn't a kinder boy in the galaxy. This scene was also deleted from the final version of the film, although it was included on the home video release.
- 2.290–291 Doug Chiang's design for a baron droid speeder (October 3, 1995) was harvested for a Sith speeder (July 22, 1996).
- 2.292 Ray Park astride his pre-CC speeder in Tunisia.
- 2.293–294 Anakin is on his way to the queen's ship to leave Tatooine. However, Darth Maul is speeding towards it, ready for a confrontation.

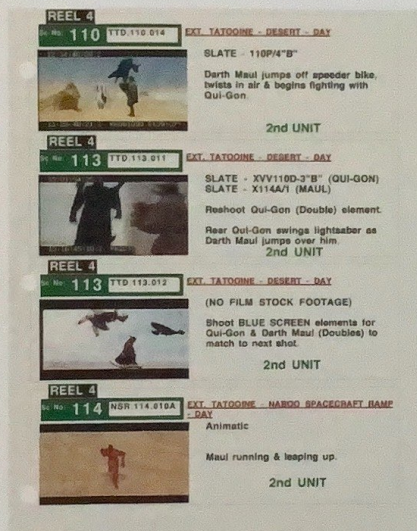


2.294



"We cast Ray Park as Darth Maul—he is an expert in kendo and martial arts. When one of the actors is an expert, it ups the ante for all the other actors to do their thing as well as they can. It makes a big difference on the screen."

George Lucas



2.299

2.295 Doug Chiang's painting depicts the lightsaber battle between Obi-Wan and Darth Maul on Tatooine (May 16, 1996, 1.5 days). This was created before Qui-Gon was added to the script.

2.296-298 Production stills showing fight rehearsals for the Qui-Gon/Darth Maul fight filmed on July 31, 1997, at Chott el Gharsa, Tozeur. Liam Neeson, Rob Inch (doubling for Qui-Gon Jinn when necessary), and Ray Park fought so vigorously that the aluminum lightsaber blades bent.

2.299 This storyboard for the March 1995 pickup shoot shows that the second unit filmed specific sections of the fight between Darth Maul and Qui-Gon using doubles for the more complex stunts.

2.300 A pneumatic ramp is used to enhance Ray Park's dramatic leap in a remarkable display of acrobatics as Rob Inch (doubling as Qui-Gon) swings his lightsaber.



2.300

31



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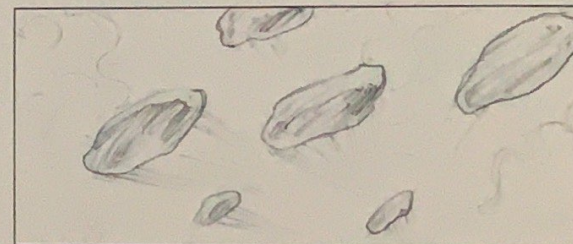
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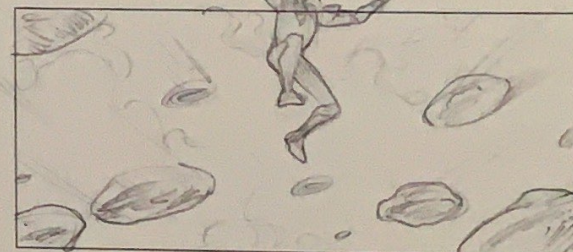
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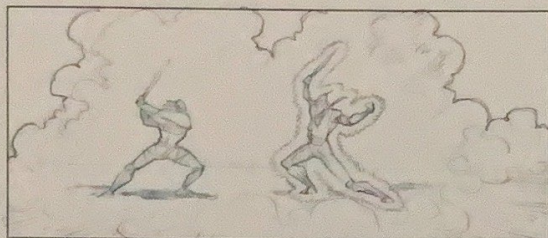
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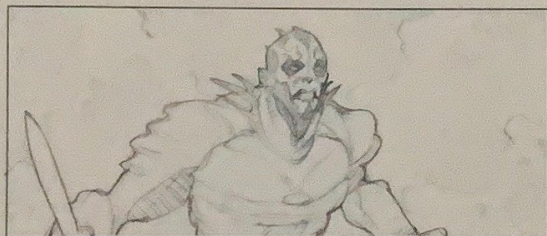
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53
A



SWI-SB-0400A

54
A



SWI-SB-0400B

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SWI-SB-0400C

2.303

54
B



SWI-SB-0401A

55



SWI-SB-0401B

57B



SWI-SB-0401C

2.304





Nick Gillard/Stunt Coordinator There's no room for error in any of the fights. You won't see it because they're so fast, but if you slowed them down and freeze-framed them, they can only parry there or they can only attack there. The moves are so natural or so correct, it's the only place they can be.

George Lucas It would not be a very exciting sequence if it was all done with doubles because the emotion of the fight is on people's faces.

Liam Neeson The first time we started rehearsing the fights, of course, we started making the sound effects of the lightsabers.

We looked at each other and thought, "Okay, we have to stop that."

Ray Park Nick told me what he wanted in the moves, but he also let me be very free in my movements and the flashier the better, which was part of Maul's arrogance. He can end with a flashy pose because he's the man.

Originally, the lightsaber had a short handle, like a normal handled lightsaber, but when we made it a little bit longer I could wrap and spin it around my body when we were doing the fights. So the lightsabers wouldn't touch my body, only the handle.

Liam Neeson I was amazed by Ewan's ability to remember all the moves. I had trouble remembering two or three moves at a time, but he could do 12-13 moves, having just learnt them.

Nick Gillard Liam has a beautiful style. Powerful. Ewan picked it up in a flash and now is, I think, faster than any of us.

On September 9, Neeson, McGregor, and Park started filming scenes 157 and 160—the fight between the Jedi and Darth Maul in the Theed central hangar—with some of the 13 setups shot at 22 frames per second (fps) so that the action is quicker when projected at 24 fps. They rehearsed and filmed the fight (scenes 161, 166, 167, 171, 177) with the main unit and the second unit for 10 further days up until the end of principal photography on September 26. A fight unit and the second unit continued to shoot for one week. Ewan McGregor worked with the fight unit on September 29, and then Ray Park and the stunt performers continued for the rest of the week.

Nick Gillard I never thought moves on wires looked believable. Instead, we used nitrogen air rams. With air rams the performers looked as if they were flying, and the landings were hard and realistic.

October 3 was the last day of photography for the fight unit. However, fight scenes 161, 166, 167, and 171 all required future completion.

Digital Clay

Doug Chiang Episode I is a breakthrough for the whole filmmaking process. For the first time, George could treat movies like digital clay. He could tweak every moment of the movie at any time. This was driven by George. He assembled the team to create the tools to do that. It was frightening to a lot of people, because they're not used to being thrown a lot of curves late in the production. That's part of the challenge: How do we make this fluid?

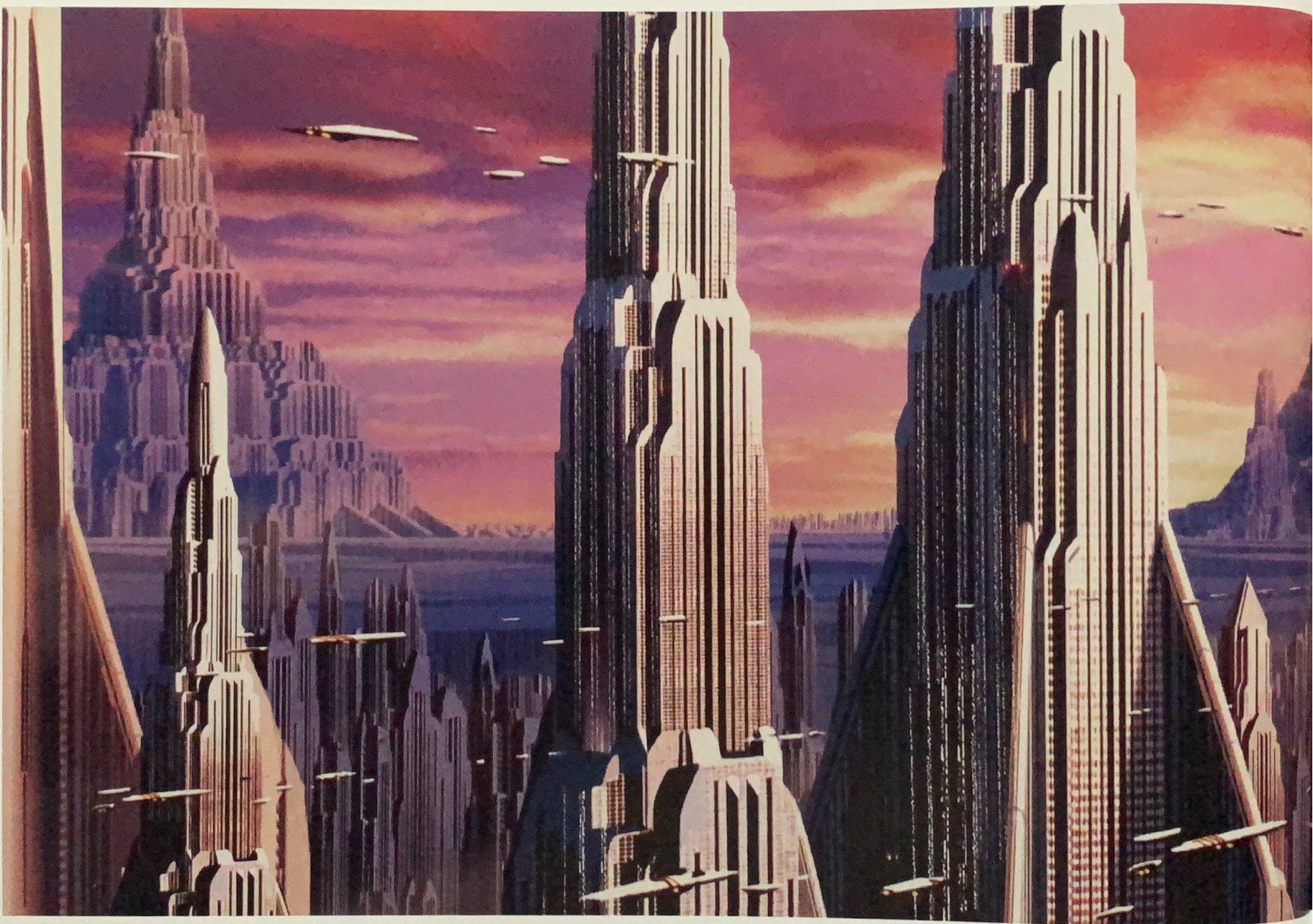


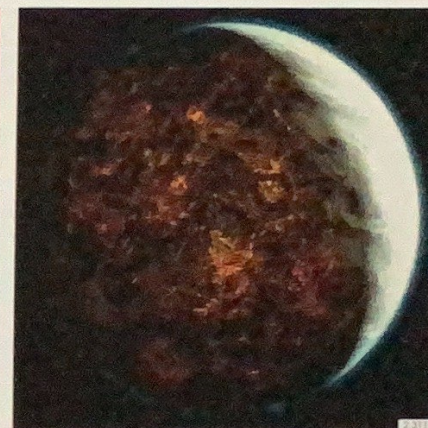
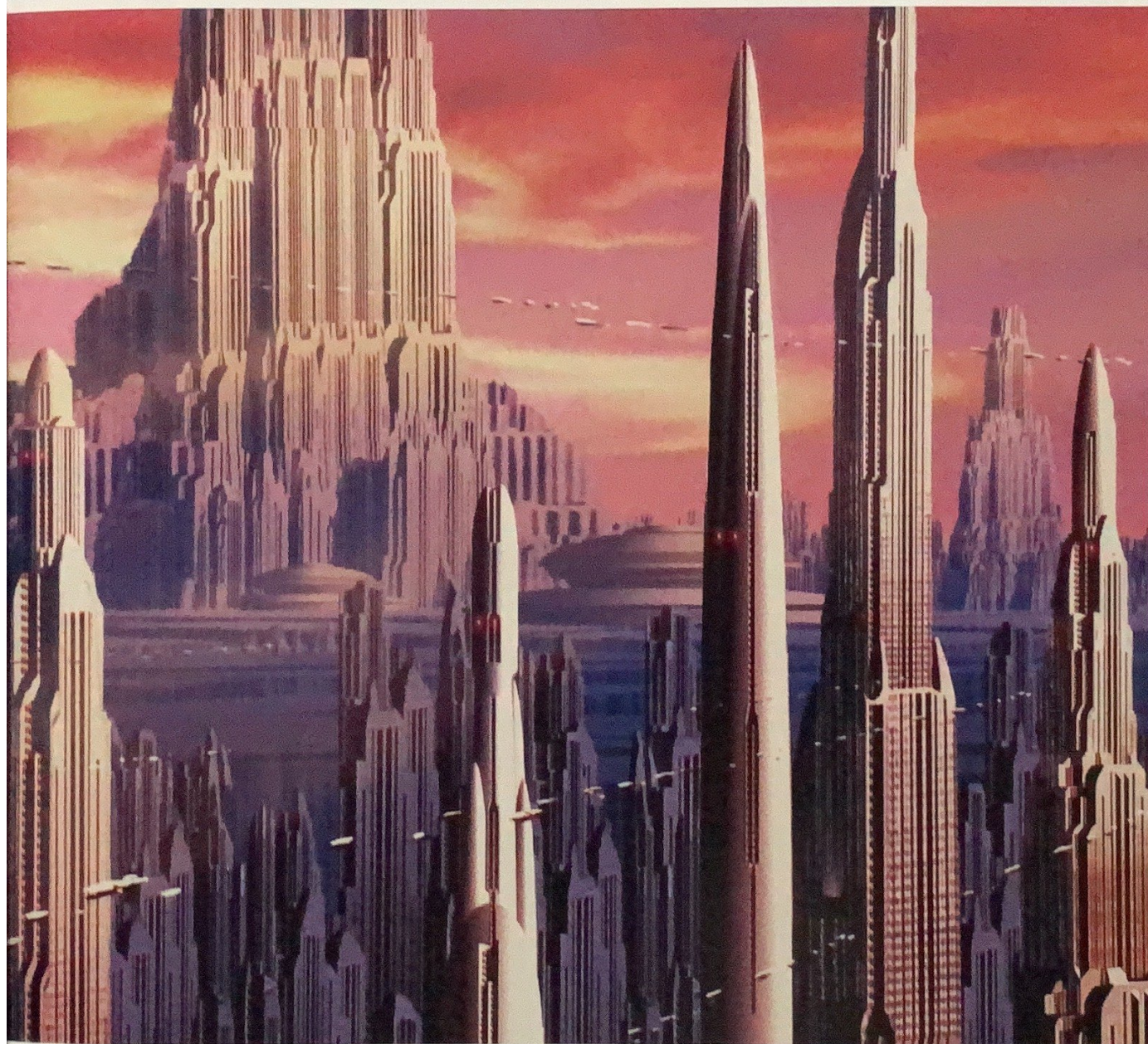
- 2.301–304 **Iain McCaig's storyboards for the Obi-Wan/Darth Maul confrontation, drawn before Qui-Gon was added to the script. The shooting script: "The two galactic warriors, Sith and Jedi, are bashing each other with incredible blows. They move in a continual cloud of dust, smashing everything around them. This is a fierce fight." The storyboards included the Sith Lord using the Force to project stones at the Jedi, and the Jedi becoming momentarily invisible.**
- 2.305 **Darth Maul and Qui-Gon continue their furious battle.**
- 2.306 **Qui-Gon escapes and the queen's ship makes a course for Coruscant.**
- 2.307 **Shot log from February 4, 1995, showing the editing and effects notes for the Qui-Gon/Darth Maul battle on the ramp of the queen's starship.**
- 2.308 **Qui-Gon: "Anakin Skywalker, meet Obi-Wan Kenobi."**
- 2.309 **The fight on the ground moves to the ramp of the queen's ship. This was removed from the final cut of the film, and Qui-Gon simply leaps upon the ramp and the ship takes off. The scene was included on the home video release.**

Project: *Star Wars* Date: 11/10/95 Page: 5 of 5 Date: 11/10/95 Time: 10:05 AM

11/10/95 11:10:00 Entry 155 01/0000 (05 K)	JANUARY, Rehearsal, 01/07/95 (11:10:00) W5 Maul onto ramp. (Spot person for Qui-Gon)
11/10/95 11:10:00 Entry 156 01/0000 (04 K)	JANUARY, Rehearsal, 01/07/95 (11:10:00) W5 Qui-Gon on Maul. W5 (Maul's light saber effect)
11/10/95 11:10:00 Entry 157 01/0000 (05 K)	JANUARY, Rehearsal, 01/07/95 (11:10:00) W5 Qui-Gon over Maul. W5 (Maul's light saber effect, whip)
11/10/95 11:10:00 Entry 158 01/0000 (05 K)	JANUARY, Rehearsal, 01/07/95 (11:10:00) W5 Qui-Gon (Maul's light saber effect, whip)
11/10/95 11:10:00 Entry 159 01/0000 (05 K)	JANUARY, Rehearsal, 01/07/95 (11:10:00) W5 Qui-Gon (Maul's light saber effect, whip)
11/10/95 11:10:00 Entry 160 01/0000 (05 K)	JANUARY, Rehearsal, 01/07/95 (11:10:00) W5 Qui-Gon (Maul's light saber effect, whip)





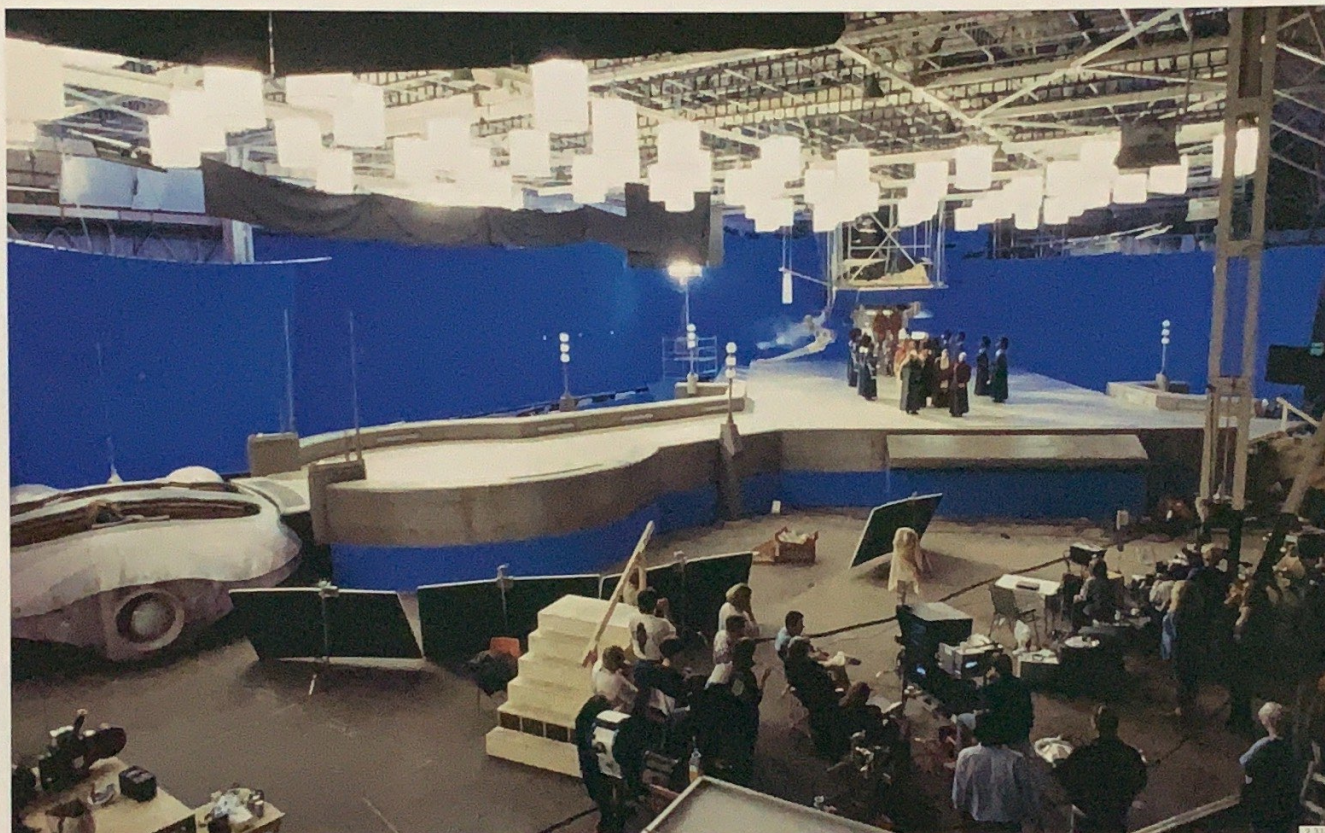


2.310 Ralph McQuarrie had created a number of designs for Coruscant during preproduction of *Return of the Jedi* (1983) and these formed the initial inspiration for the cityscapes in the prequels, including this Doug Chiang concept (July 2, 1997).

2.311 Establishing shot of the ecumenopolis Coruscant.

2.312 On their way to Coruscant, Padmé comforts Anakin who is cold and missing his mother. In return, Anakin gives her a pendant he carved out of a jagor snippet that will bring her good fortune. This scene echoes the scene in *A New Hope*, after the death of Obi-Wan Kenobi, where Leia comforts Luke by placing a blanket around him.





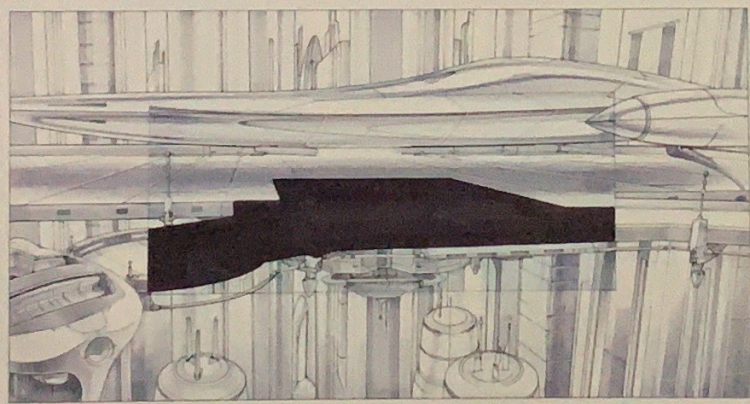
2.313 The queen's ship arrives on the Corsucant Senate landing platform, then the queen and her entourage disembark. This scene was shot on July 2 and 3, 1997 on FSI Stage in Leavesden.

2.314 The Dong Chiang/Jay Shuster artwork (October 29, 1997) shows where the live-action plate is to be placed within the digital matte.

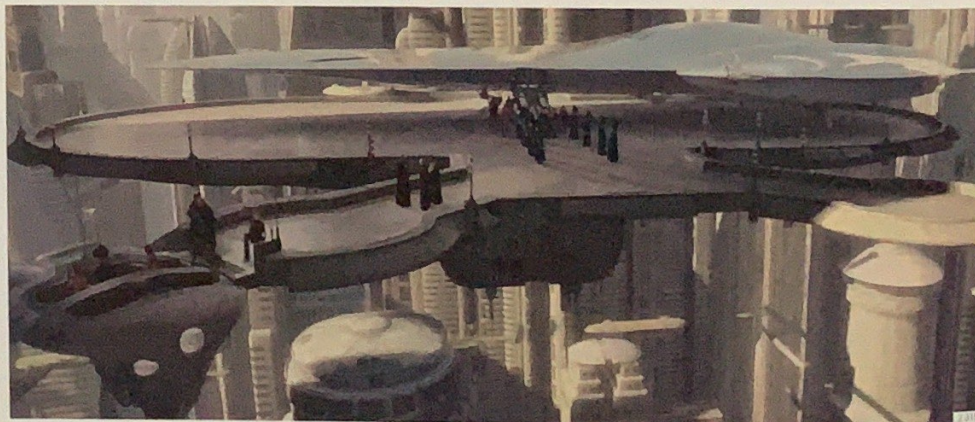
2.315 The final frame shows the seamless integration of the live-action and CG plates.

2.316-317 On set and final frame of the Queen's entourage being greeted by Naboo's Senator Palpatine (Ian McDiarmid) and kindly Chancellor Valorum (Terence Stamp, right). This was the first day on set for Liam Neeson and Ewan McGregor.

2.318 Keira Knightley and Natalie Portman playing Sabé and Padmé. Knightley was cast because of her physical resemblance to Portman so that she could play one of the handmaidens/decoys to the queen.



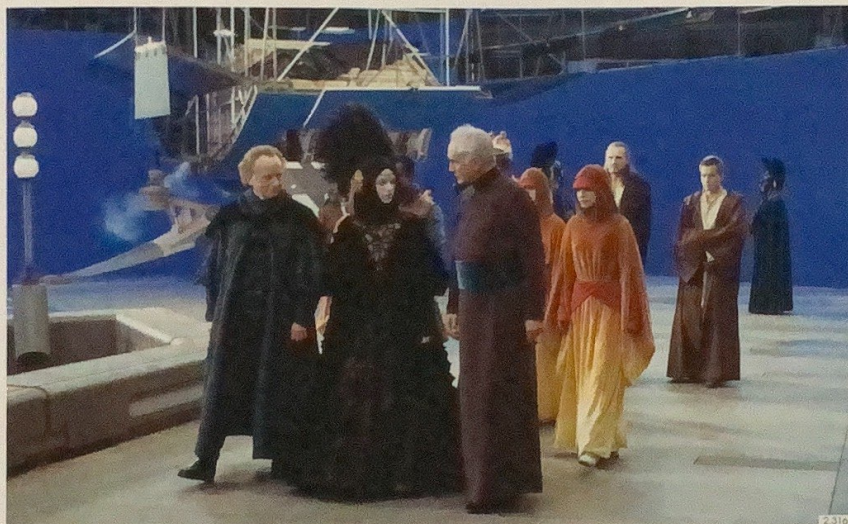
2.314



2.315

“This film is still in the style of an old Republic serial, but it’s now a big city movie. The first three Star Wars were from Kansas and these three are from New York.”

George Lucas



2.310

David Dozoretz We started editing before filming began and did the last animatic two months before the film came out, so we really jumbled up everything. It’s really a very liberating experience, especially for George.

George Lucas I can write and shoot and edit simultaneously, and constantly upgrade what I’m doing. Like with an oil painting, I can step back, look at it, and then add a color.

David Tattersall The editing process is one of George’s passions, so we provided him with plenty of raw material. I don’t think it’s any secret that we shot 1.25 million feet of film!

David Tanaka / Visual Effects Editor During the shoot in London all of the live-action film was processed and immediately telecined.

Paul Martin Smith / Editor I had everything on tape, so we digitized the circled takes and loaded them into Avid. George started coming in on Saturdays for us to go over the scenes. There’s a lot of pressure to get many setups done in a day, so if, for example, you are missing anything, or if a couple of lines got flopped, I’d point out the problem. George’d reshoot it, or get the second unit to cover it. Working this way we had 80 percent

of the film cut in rough assembly before we left London, minus the effects shots of course.

After principal photography concluded, the team returned to Skywalker Ranch to commence the postproduction process.

Paul Martin Smith It became apparent with the volume of material and the amount of visual effects that we needed to have George switch between two cutting rooms. He’d cut with me for a week or so, and then he’d move over and do some sequences with Ben Burtt, which would give me the chance to work through effects and pass them off to ILM. That worked out superbly well.

George Lucas Having the freedom of being able to move people around in the frame, change the framing, change the characters in the frame, change the actions of the characters in the frame, is kind of exciting. It gives me much more control over building a better performance and a better scene than I was able to do by just doing it on the set. Some directors are perfectionists on the set. I work with a lot of captured footage and then mold it into what I want it to be.

Tim Alexander / Computer Graphics Supervisor They had two characters that were in a scene together, and maybe not quite like the performance of one of them, so we’d have to split the take. We’d have the person on the left from one take and the person on the right from another take and cut them together to make it look like it was all the same take. One of them took place in Watto’s shop, when Anakin meets Padmé for the first time, and they’re having that little conversation.

At the dinner table scene, Shmi is in the foreground and looking at Anakin. We actually sliced her head off and then reverse-printed it, because she was turned the wrong way. David Dozoretz worked on a couple of shots where Anakin was talking, but they didn’t want him talking, so his mouth was replaced with one that wasn’t moving.

Paul Martin Smith There’s one shot—scene 82, in the backyard of the slave quarters—where we wanted one of Anakin’s friends to turn his head toward R2-D2 and C-3PO. In the take we used, he didn’t, so we just moved earlier down into the take, got him where his head was turning, did a four-frame morph to hide the jump cut, blew it up, painted in the right-hand side of the set—just on the kid’s head.

George said, “I didn’t like the way I blocked this originally. Let me reblock it.” We digitally reblocked the scene to move or get rid of a character. We even shot extras to stand in for Padmé, to fix the continuity. We put new shots, like when R2-D2 and C-3PO



2.318

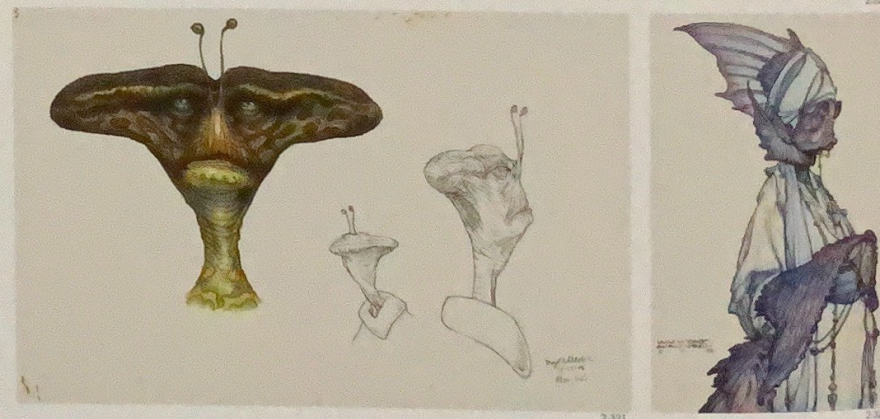


2.317



"Robin Gurland, our casting director, was watching a talk show in England. One question asked of Sam was what movie would you love to be in. He said Star Wars. We called his bluff and called him. We wrote a part for him and he spent three days working with us."

Rick McCallum



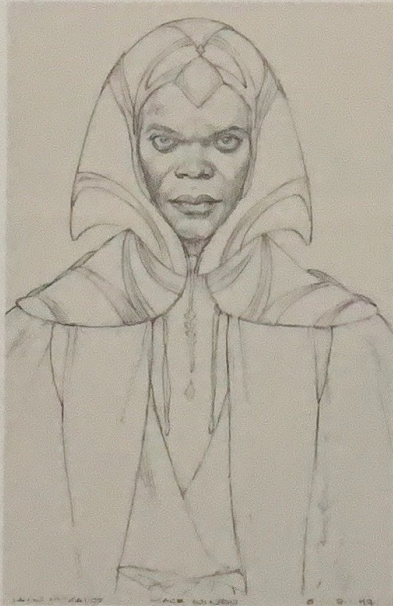


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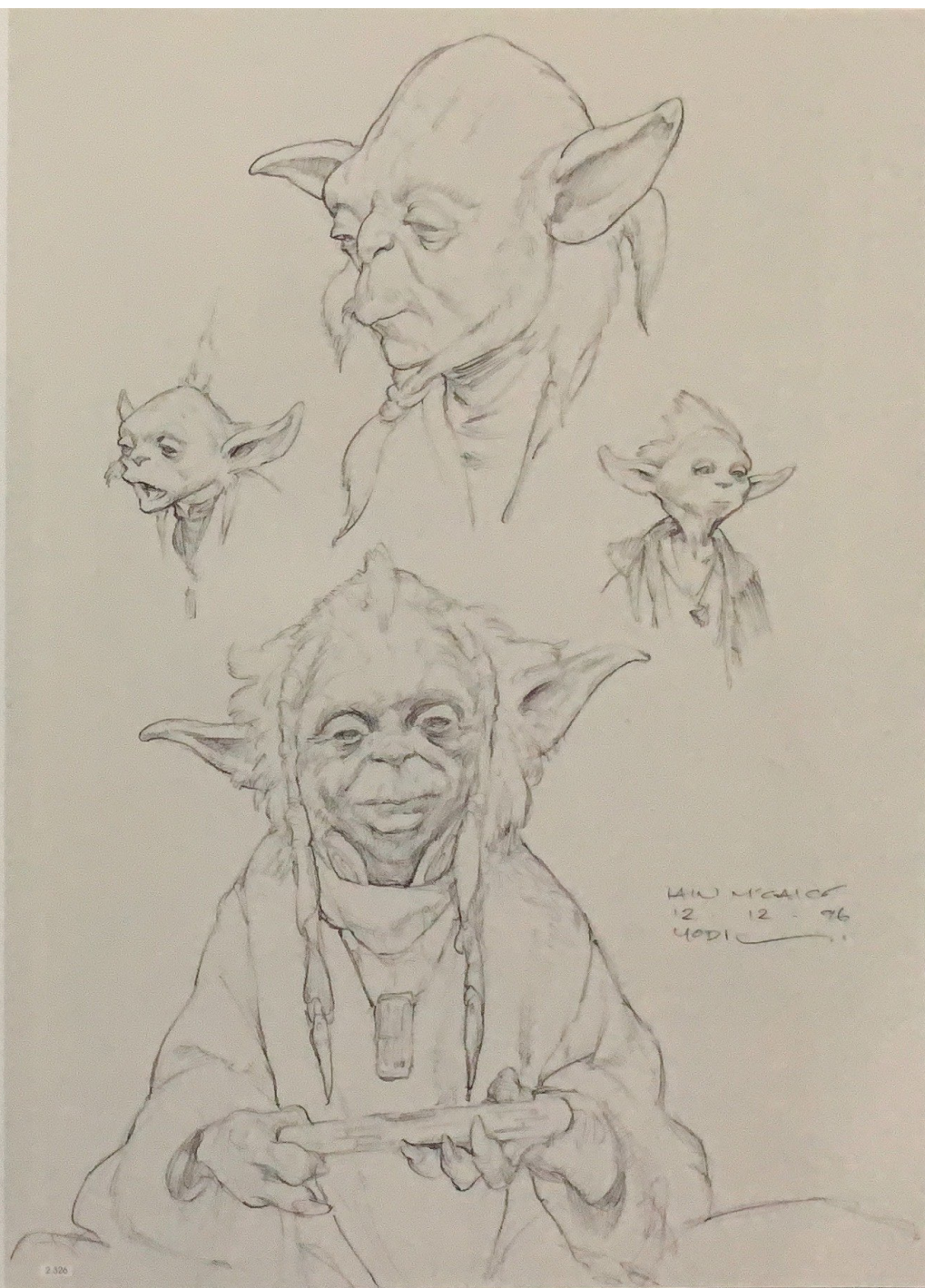
- 2.319 The Jedi Council is introduced for the first time, so over a long period concept art was created for Jedi of differing races, with many being rejected for being too complex. This Jedi was designed by Iain McEug (August 25, 1997) and appeared as Oppo Rancisis on the Jedi Council.
- 2.320 Terry! Whillatch's alien Jedi (December 11, 1996) was later used for Tera Sinube on The Clone Wars.
- 2.321 Whillatch presents different views of an alien Jedi (December 17, 1996).
- 2.322 McEug's alien Jedi (February 11, 1997) later became the basis for Rohanino on The Clone Wars.
- 2.323 This is McEug's proposed costume design for Mace Windu.
- 2.324 McEug's costume suggestion of black Jedi robes for Yoda.
- 2.325 Concept art for Jedi Mace Windu by McEug (May 2, 1997) after Samuel L. Jackson had been cast in the role.
- 2.326 Various concepts for a younger Yoda by Iain McEug (December 12, 1996). McEug: "In the end George decided to keep Yoda pretty much intact, but at one point he had a long beard that he knotted below his chin in a very Mongolian fashion. In another, I imagined he might be much younger, and that became Yaddle."



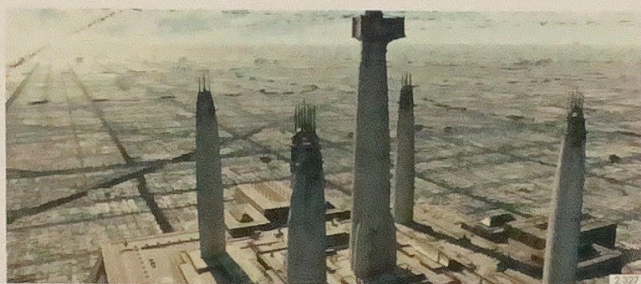
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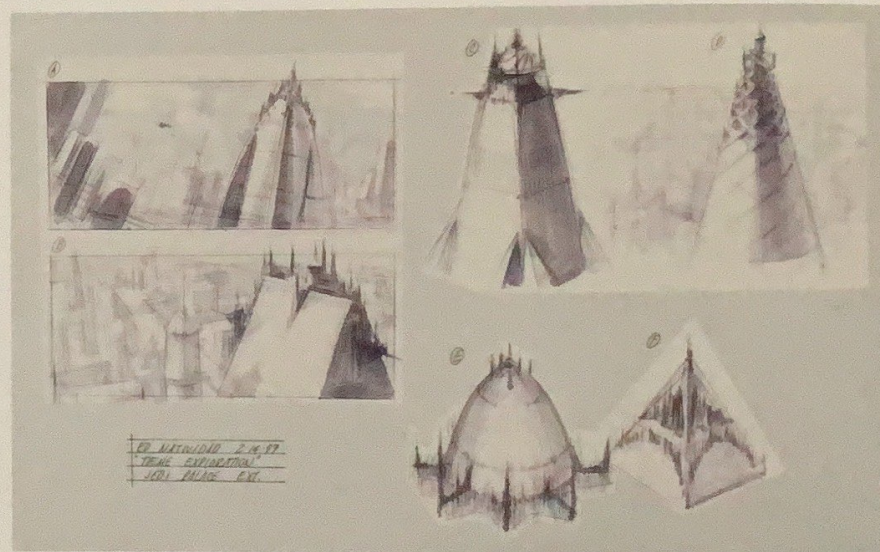
walk away. We never had that wide shot, so that's made up of about four different shots.

There were a couple of times in the original script where Qui-Gon was giving Jar Jar a hard time. We wanted to get rid of those lines, so we added an extra walking in front of the camera to hide Liam's lips, and there went the line. Another time, Padmé said a line at the end of the movie, and George wanted her to say something different, so we changed her lips. We had her ADR the line, shot somebody's lips and pasted in the lips to match what she looked like. You've seen animals talking, now we can make actors talk.

New Strategies

George Lucas We had designs and maquettes of Jar Jar, Watto, Sebulba et cetera, which ILM used to start building their computer models. As soon as we finished filming, we began cutting sequences so that Rob Coleman could begin animating the characters and ILM could add sets and the other VFX.

John Knoll Two thousand visual effects shots in one movie is many times more than what is even considered a huge show. These shots were not all of one type. They varied from simple splits and removals to extremely complex fully computer-generated



environments filled with thousands of droids and Gungans engaged in hand-to-hand combat.

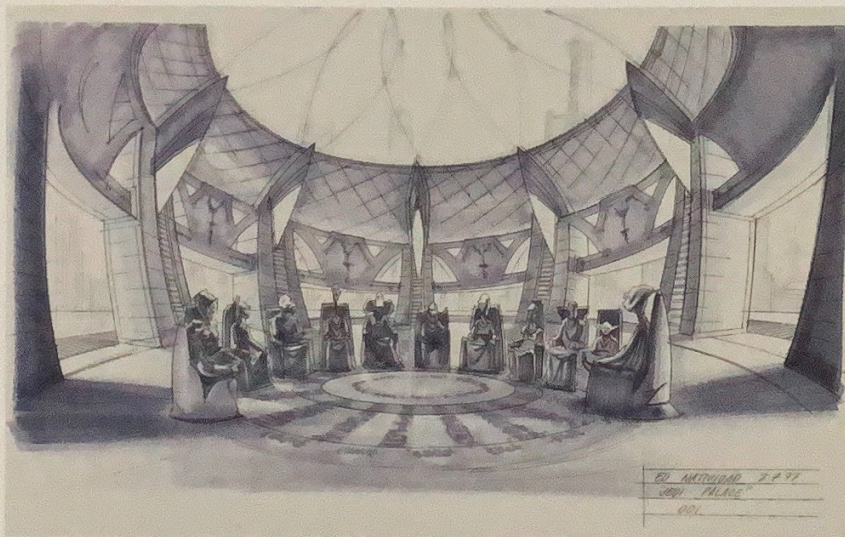
Many shots depicted in the storyboards couldn't be executed at all with the tools we had available to us at the time. New software had to be developed to handle a variety of challenges: clothed characters, very complex scenes with thousands of characters, synthetic terrains, complex models with hundreds of thousands of surfaces, synthetic pyro, rigid body and soft body dynamics that had to be integrated into character animations and motion captures, plus numerous other unsolved problems.

Rob Coleman We had been called upon in the past to create photorealistic creatures, but never had we been required to come up with so many different characters, many of which had critically important roles in a movie. There was a palpable feeling when we began the visual effects production on this film that we were not going to be able to get it all done in the time allotted. There were just too many visual effects sequences and computer-generated characters. We had to come up with new

- 2.327 Establishing shot of the Jedi Temple on Coruscant.
- 2.328 Ed Natividad's artwork for the Jedi Temple exterior (February 25, 1997). The original design featured a single central column with four surrounding columns.
- 2.329 Natividad concepts for the top of the Jedi Temple (February 14, 1997).
- 2.330 This Natividad concept for the Jedi Council room (February 7, 1997) gives views both to the sky and to the surrounding cityscape.
- 2.331 Qui-Gon and Obi-Wan brief the Jedi Council on the existence of a Sith Lord, and they also introduce Anakin as a potential Padawan.
- 2.332 Doug Chiang's concept for the Jedi Council room (January 27, 1997).

"George invited me to his ranch. I told him, 'I don't care what part you give me I'll be a stormtrooper, anything.' He said, 'Probably the most you'd be saying is: Look out! Duck—stuff like that.' And I said, 'George, that's cool. Anything.'"

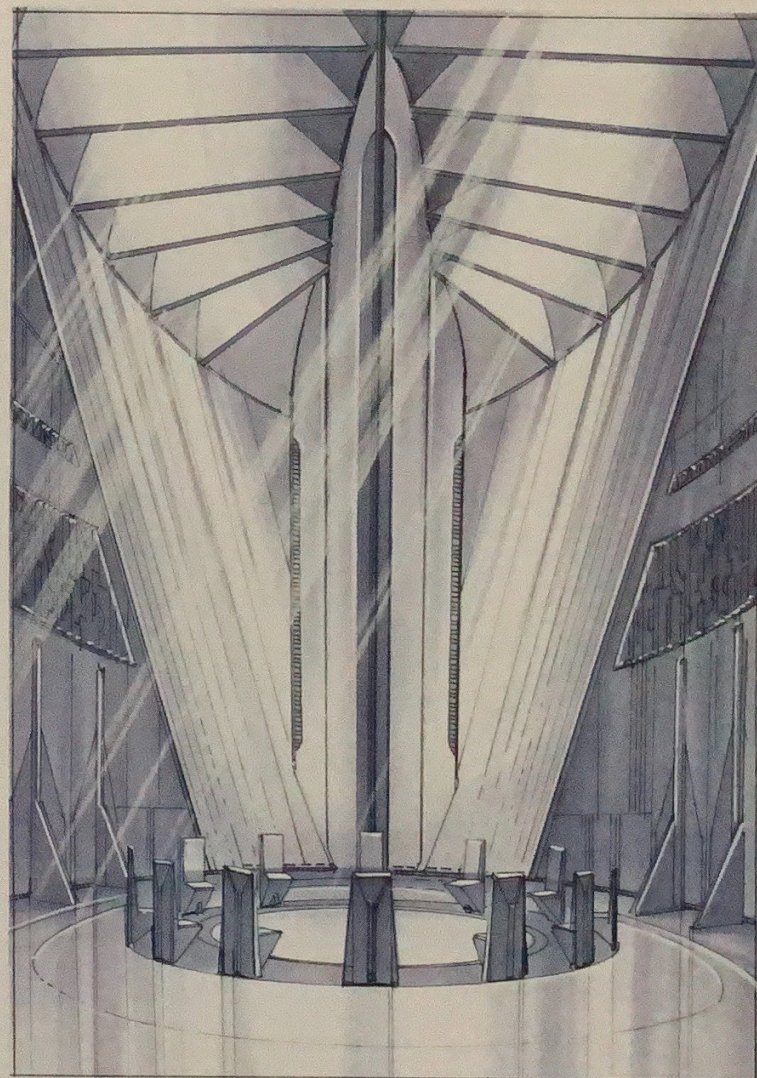
Samuel L. Jackson



2.330



2.331



JEDI COUNCIL ROOM
12-97
0820

2.332

"There are some very goofy hairstyles here. George has had a bad rap for giving those cinnamon buns to Princess Leia, so I think he's up for the firing squad for this one..."

Iain McCaig

strategies for workflow, animatics, production schedules, rendering, software, hardware, and final output. We had to rethink how we went about approaching visual effects production. Episode I was like three large effects shows rolled into one.

Dennis Muren / Visual Effects Supervisor John Knoll, Scott Squires, and I divided the show between us. I looked at the storyboards and saw two sequences that looked like the most fun stuff to do: the underwater sequence and the big Gungan/droid battle at the end. So I became responsible for 390 shots including those two sequences.

John Knoll I supervised 1,073 shots. These included all of the space scenes, Trade Federation ship interiors, scenes on Tatooine (Mos Espa, Watto's shop, podrace et cetera), and about half of



the scenes taking place on Coruscant (the landing platform, Palpatine's quarters).

Scott Squires / Visual Effects Supervisor My work involved supervising close to 600 shots over a one-year period. These shots involved the scenes in Theed (Jedi battle, hangar battles, queen's palace interior and exteriors, courtyards, end parade, etc.), the Galactic Senate sequence and the Jedi Palace sequences.

The majority of shots involved not only integrating computer graphics characters into scenes but extensive use of virtual sets and backgrounds. These virtual backgrounds were made up of physical miniatures, CG sets, and digital matte paintings depending on the needs of the shot. The original rough cut of the film illustrated just how much was filmed against blue screen.

Many sequences used partial sets so it was critical to build models that matched the blueprints as well as color and textures of the original set. Most interior locations involved reflective floors that would require creation of reflections in addition to shadows for actors and CG characters.

2.333 Iain McCaig concept art for the queen's hairstyles (December 22, 1995). McCaig: "For hair I tried to make sure that it got more and more outrageous with every costume I designed."

2.334 The queen in Palpatine's quarters as she decides her strategy.

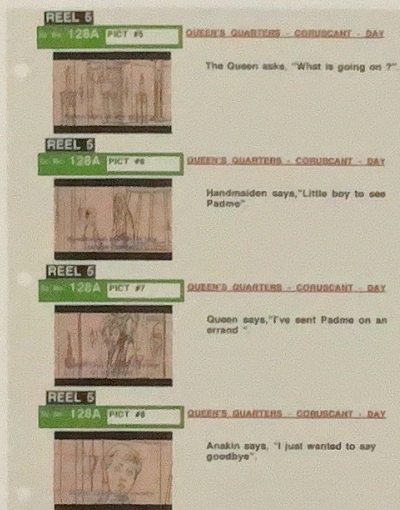
2.335 Lucas and Portman on set. This was the second scene to be shot on the first day of filming. Lucas: "Natalie is fantastic. It all came together. I only had to do two takes. She really had it down. Ian's always great, but I had no idea what was going to happen with her."

2.336 Storyboard for new scene A12S, filmed on August 10, 1998, where Anakin wishes to say goodbye to Padmé. Consideration was given to further dialogue wishing her good luck for her speech at the Senate, but this was discarded. The scene is important because it shows Anakin wants to stay connected to Padmé.

2.337 Final frame of Anakin meeting the queen, who informs him that she has sent Padmé on an errand. Queen Amidala: "We're sure her heart goes with you."

2.338 Iain McCaig's concept for Queen Amidala's costume (December 13, 1995), stamped "Fahalaona" by Lucas. McCaig: "This huge hairstyle was historically accurate, but she had to walk sideways through doorways."





2.330



337

Dennis Muren The computer gear for the high-end 3-D graphics were SGIs, we animate with Softimage, we model mainly with Alias software, and we render with RenderMan software. We have huge amounts of our own software that we use. We also use Flame and Inferno software for some compositing.

We were trying to get a few shots a day out, about 30 or 40 shots a week, and we had to keep that pace up throughout the production, or we'd get behind.

Rick McCallum We used electronic projection for viewing dailies during production and to screen the various cuts throughout the postproduction process. We used an electronic system for the sound team to mix with. For dailies, we used the Digital Projection POWER 4dv. For screening cuts in progress, we used Electrohome's VistaPro 2000. The sound mix in our Mix A facility used an Electrohome Roadie.

Fred Meyers/Digital Operations There was connectivity between the editors at the Ranch and ILM. They could set up their own live review sessions to show and talk about how the cut was changed that day. Everyone would look at one image that would have not only the dailies material in it but also the images of the people who were participating. Along with high-quality audio, they'd have video pointers so they could point to things on the screen.

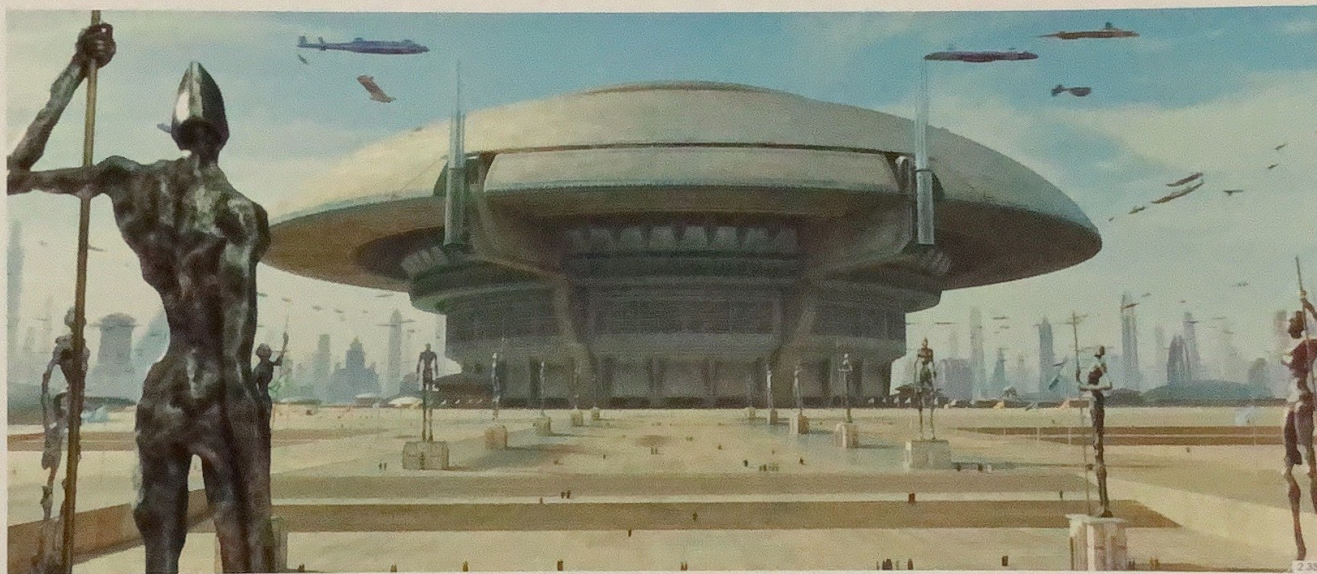
Tim Alexander We would go to "George Dailies," on Tuesdays and Thursdays. George would come down to ILM and they would show him video, as well as film. Rob Coleman would show a sequence of shots and throw out his ideas, and then George



2.330

SENATE

OK
PARADISE



would say, "It should be a little slower here... faster there. Maybe we should try to recut this... let's add a shot here." It was very open. When you have someone like Rob saying, "Maybe this is the way it should be cut," it's smart for Lucas to listen. That was great for us "computer" guys, because usually we don't come into contact with the directors or the live-action shoots. It really taught us a lot about the editing and directing processes. It was really good for the crew as well; people felt better about it because they felt closer to it.

Cari

Rob Coleman We have about 66 creatures, and five of them have speaking parts. Jar Jar Binks alone is in 400 shots. I'm doing 800 shots with a staff of 45.

Four computer-generated characters had key speaking roles in the film: Watto, Sebulba, Boss Nass, and Jar Jar. These

four characters had to hold their own against the live-action actors. Not only did they have to seamlessly blend into their environment, but they had to give a believable performance, and deliver important story dialogue while being compared to their live fellow actors on a frame by frame basis. These visual effects had to live and breathe.

For the animation, we broke down the work needed for the various characters, and then into units for each. Each of the main computer characters had a lead animator; there were also lead animators assigned to major sequences such as the Gungan ground battle, the podrace, and the underwater sequence.

To ensure that we were creating performances that would be engaging and entertaining, we took great care in studying the voice actors for each of our key computer characters. The actors' facial expressions and body movements were analyzed and then the animators set about key frame animating each computer character.

Paul Martin Smith George shot one take with the actor on set doing the voice of our animated characters. Jar Jar was in a costume. Watto wasn't. Then George would do another take with the actors off-camera. We would literally use that as a "patch." I would take out the section of the actor and his voice and put him where we wanted him in the empty plate. If George wanted, for example, Jar Jar's head staring at Qui-Gon I'd find a head turn, freeze it so it kept its direction, so Rob Coleman would know exactly where the eyelines should be.

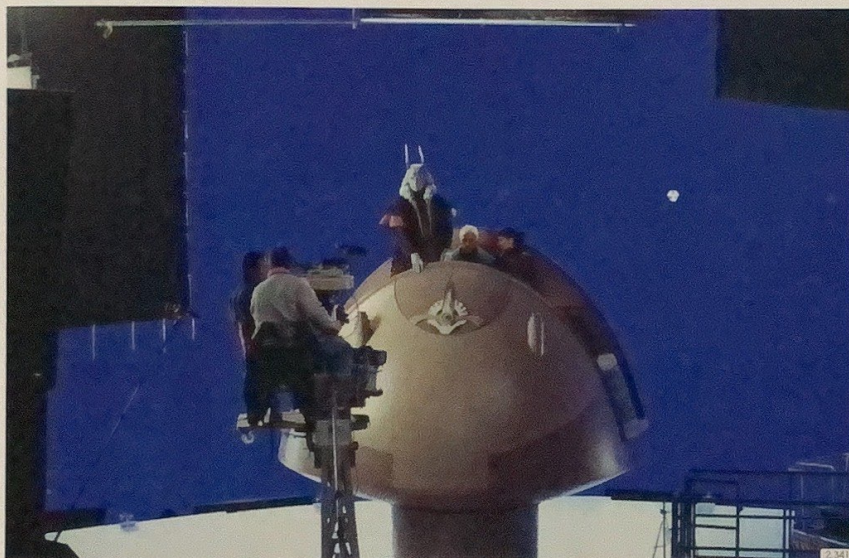
Rob Coleman Jar Jar's performance really started with Ahmed Best. Ahmed's performance was a reference.

Ahmed Best I did double everything. I was there on the set, and then I went to San Francisco and did more shooting for motion capture and animation.

Jar Jar's facial features were animated using *Caricature*, also called "Cari," software ILM had developed for *Dragonheart* (1996).

Steve Rawlins / Character Animator Cari is one of the most important tools for getting the character to act and deliver a performance. It's where you start to see the character come alive—it happens right in front of your face. You start by blocking Jar Jar in the frame then flesh out his movement, the right speed, the right weight, then Cari really makes his face come alive. Instead of a thing you're sliding around in the frame, you have an actor.





Rob Coleman We have the ability to control all of the soft tissue in the face—the muscles, eye blinks, breathing.

Six months later, after going through a continuous process of refinement, the character became more defined.

Paul Martin Smith In a sense, what ILM was giving us was the second set of rushes.

November 25, 1997

Paul Martin Smith The entire podrace was cut before George even shot anything, and we were cutting it until the week before the final mix.

The cut was alive for a good three years—two years during the shoot and final edit, and a year before that in previsualization.

David Dozoretz After principal photography, we added the live-action footage into the animatics, and then we added the computer set extensions, and the computer ships we got from ILM.

John Knoll The first challenge of the podrace was figuring out how to create the landscapes. Location aerial plates were not a realistic option both because of the very specific terrain features George wanted to see as well as the dangerous paths he wanted to take through them.

Miniatures were possible for a few of the more enclosed terrains like the canyons and the arena, but most of the terrains were so wide open, and the speeds depicted so fast that the models would have to be huge and would be very difficult to shoot. That left it to some form of computer graphics, but what? This had to work not for just a couple of shots, but for over 300 shots in a 10-minute sequence. The solution was to greatly extend a 3-D matte painting technique that we first used on *Mission: Impossible*.



2.339 The grand exterior of the Galactic Senate building.

2.340 Doug Chiang's concept for the Senate interior (November 1, 1995) was influenced by the Expressionist style of German films from the 1920s and 1930s, such as *Metropolis* (1927).

2.341 Filming Chancellor Valorum's central elevated box inside the Senate Chamber on July 1, 1997.

2.342 Jay Shuster storyboard (January 15, 1998) illustrating how the two congressional boxes that were built as sets integrate with the background of the Senate, which will be composited into the shot in postproduction.

2.343 Final frame of the Senate Chamber.





Terrill Skidmore
11-5-85
Ewok Costume Sketches

2344



Terrill Skidmore
11-20-85
Ewok Costume Sketches

2345



2.346

2.344-345 Terryt Whitlatch was given a free hand to design alien senators (December 3 and November 29, 1995). The design on the left became the basis for Senator Toonback Tuora in the film.

2.346 Iain McCaig's design for a Medusa senator (December 1, 1995). McCaig: "The art department worked on conceptual design at Skywalker Ranch. There was no screenplay, and if there was, we hadn't read it; it was given to us verbally. Everything was very wide open... you could come up with anything you felt like drawing that day and somehow it seemed to fit in. The job was always, if you couldn't figure out a place for it, it was a Senator on Coruscant."

2.347 Senator concepts from Iain McCaig (March 12, 1997).

Distant objects were rendered by projecting matte paintings or photography of real objects onto simple geometry. Closer objects (like the stone arches) were created first as miniatures. The miniatures were then digitized as medium-resolution CG models. The miniatures were then photographed with a still camera out in the parking lot, and the photographs were projected onto the CG model. The result was a series of very realistic objects that could be placed into a scene, and the CG camera flown through them without any concern about depth of field, camera clearance, or limits of travel.

Finally, the ground plane was created on a frame by frame basis by a piece of software that created geometry only where the camera was looking, high resolution where it was close to the camera and low resolution further away. This gave us terrain with enough visual complexity using optimized geometry that could be rendered in a reasonable amount of time with a reasonable amount of memory.

Following *Star Wars* tradition, the pods had a very complex exposed machinery look. Highly detailed miniatures were used for the more static shots (like the interior of the podrace hangar), but CG models were used for all of the flying scenes. Building CG models of the extremely complex and detailed shapes of the pods resulted in the heaviest CG models we've ever had to deal with. Many shots contained more CVs (control vertices) than pixels!

Texturing dozens of models each with several hundred separate texture maps and surface material also presented problems. New software was needed to keep them organized and make fine-tuning of shader parameters tractable. I was constantly comparing our (computerized) renders to photographic reality. If we were just slightly off, it was pretty obvious.

A number of the pods crash during the sequence. George's desire was for the crashes to not simply be big fireballs, but instead to look like Formula One car crashes, where the cars tumble end over end, shredding apart and scattering pieces everywhere. Our first thought was to build breakaway pyro models of the pods and blow them up in a miniature terrain set. But as soon as we began to work out how fast the camera would need to travel, what rigging would be necessary, how much miniature set would be needed, and what frame rate would be required, it became clear that that approach would be far too difficult and costly.

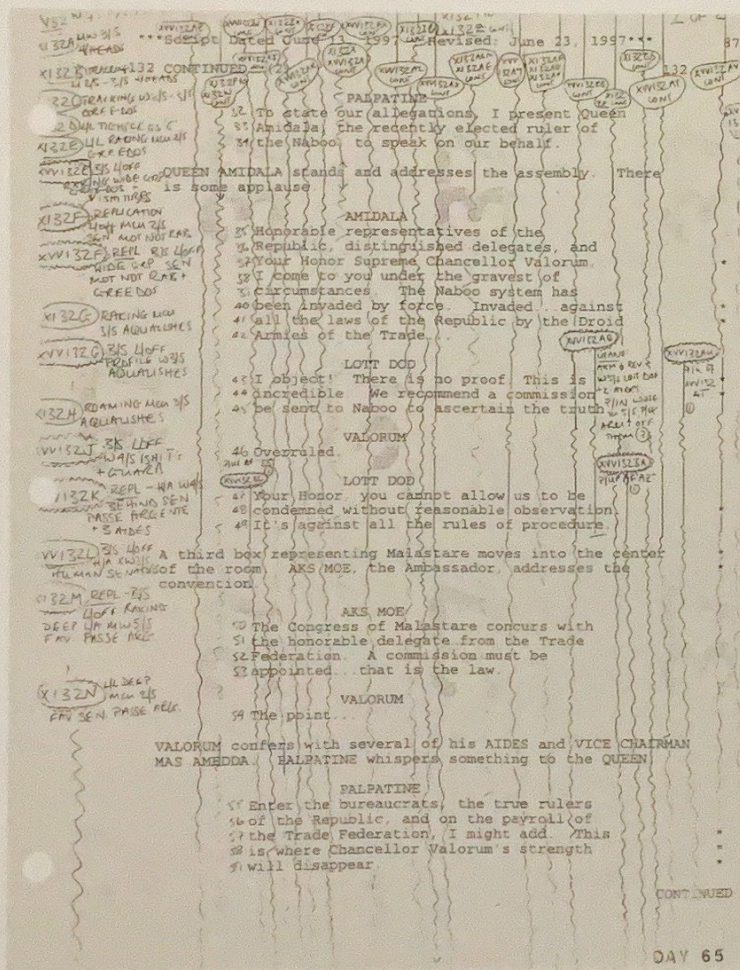
We decided to simulate the crashes in CG using rigid and soft body dynamics, coupled with custom software to deform and break the model appropriately. The result was a system that had both the realism and randomness of a physical simulation.



2.347

"We built the main head of the podium where the Chancellor stands, but we have to extend that tower down with VFX. We also built two pods where the senators stand and a bit of the wall behind them. But in the scene there are over 1,000 pods, we had to computer-generate all of those, as well as shooting the senators against blue screen and compositing them into the shot."

Scott Squires



- 2.340 Senator Bail Antilles (Adrian Dunbar) of Alderaan seconds the motion for a vote of no confidence in Chancellor Valorum.
- 2.349 Lined script for Scene 132 where Palpatine presents Queen Amidala to the Senate so she can inform them of the invasion of Naboo. Script supervisor Jayne-Ann Tenggren has made detailed notes on each take, with each alien senator's pod requiring a number of takes.
- 2.350 Palpatine urges Queen Amidala to plead her case to the Senate, and this leads to a vote of no confidence in Chancellor Valorum's leadership.
- 2.351 B Stage at Leavesden Studio housed both the Chancellor's central podium (left) and two congressional pods (right). By placing different senators in the pods at differing angles, they can be digitally moved and stitched together to form part of the Galactic Senate Chamber.
- 2.352 Lucas directing the Senate scene while script supervisor Jayne-Ann Tenggren takes notes. The camera track and crane are in position to create a dynamic take. H.M.'s John Knoll (right) was on set to monitor the VFX requirements of each scene.



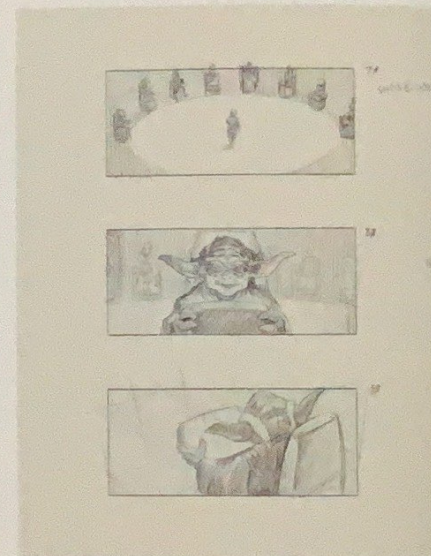




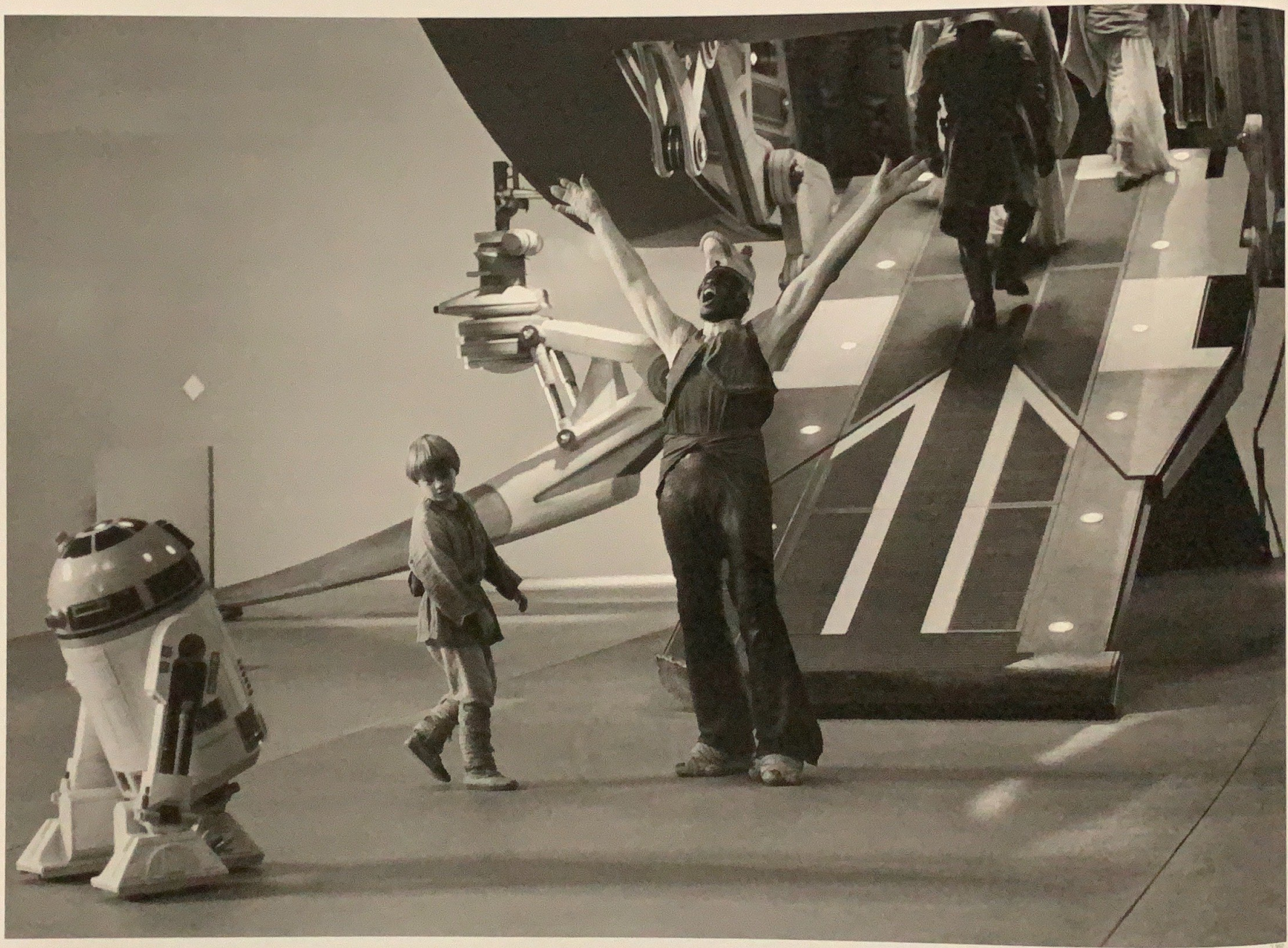
**"I died and went to heaven. I looked up
and there I was in Star Wars with Yoda."**

Samuel L. Jackson

- 2.353 Rick McCallum: "Frank Oz will be playing Yoda again. The majority of the time he will be controlled by Frank, but in those circumstances where Yoda needs to walk, then he will be CG. CG is just a tool that helps you solve problems that you can't do in other ways."
- 2.354 Storyboard by Ed Natividad for Anakin's assessment by the Jedi Council for his suitability to become a Padawan. Originally it was envisaged that Yoda would perform the test.
- 2.355 Anakin correctly identifies the objects on Mace Windu's viewing screen.
- 2.356 Queen Amidala is troubled. She has a difficult decision to make: whether or not to go to war.







"Midi-chlorians are a microscopic life-form that resides within all living cells and communicates with the Force. We are symbionts with them."

Qui-Gon Jinn

"Symbionts?"

Anakin Skywalker

"Life-forms living together for mutual advantage."

Qui-Gon Jinn



REEL 5

Sc No: 141B PICT #4

INT. NABOO SPACECRAFT - MAIN COMPARTMENT

New Scene.



Padmé says, "The Queen has had to make a difficult decision"

REEL 5

Sc No: 141B PICT #5

INT. NABOO SPACECRAFT - MAIN COMPARTMENT

New Scene.



Anakin says, "What are we going to do?"

REEL 6

Sc No: 141B PICT #6

INT. NABOO SPACECRAFT - MAIN COMPARTMENT

New Scene.



Padmé says, "The Queen has reached a point where she must go to war"

REEL 5

Sc No: 141C PICT #1

EXT. NABOO SWAMP / BEACH - DAY

New Scene.



Ship unloading in the forest

Qui-Gon says, "I feel the presence of the Sith"



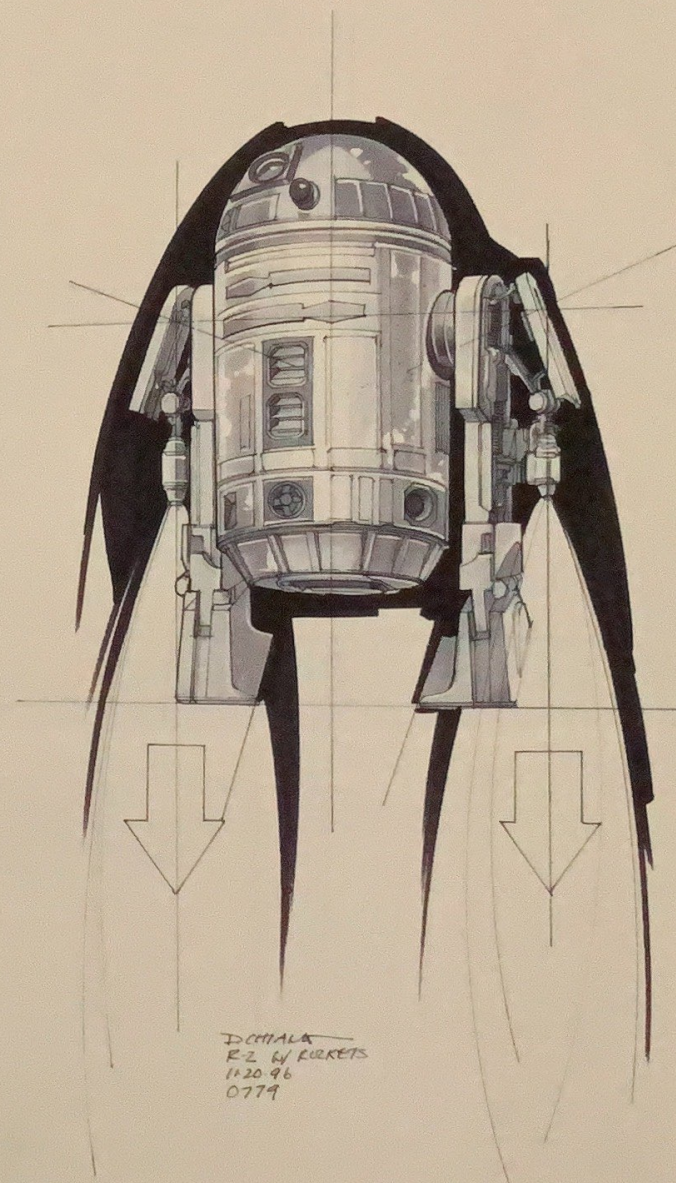
2.357 At the end of a somber scene where Obi-Wan expresses doubt about Anakin being trained as a Jedi, Qui-Gon tells Anakin about midi-chlorians, and the queen is escorted on board. Jar Jar jubilantly exclaims, "Wesa goen home!"

2.358 As they prepare to disembark on Naboo, Anakin is happy to see Padmé again. The scene was deleted.

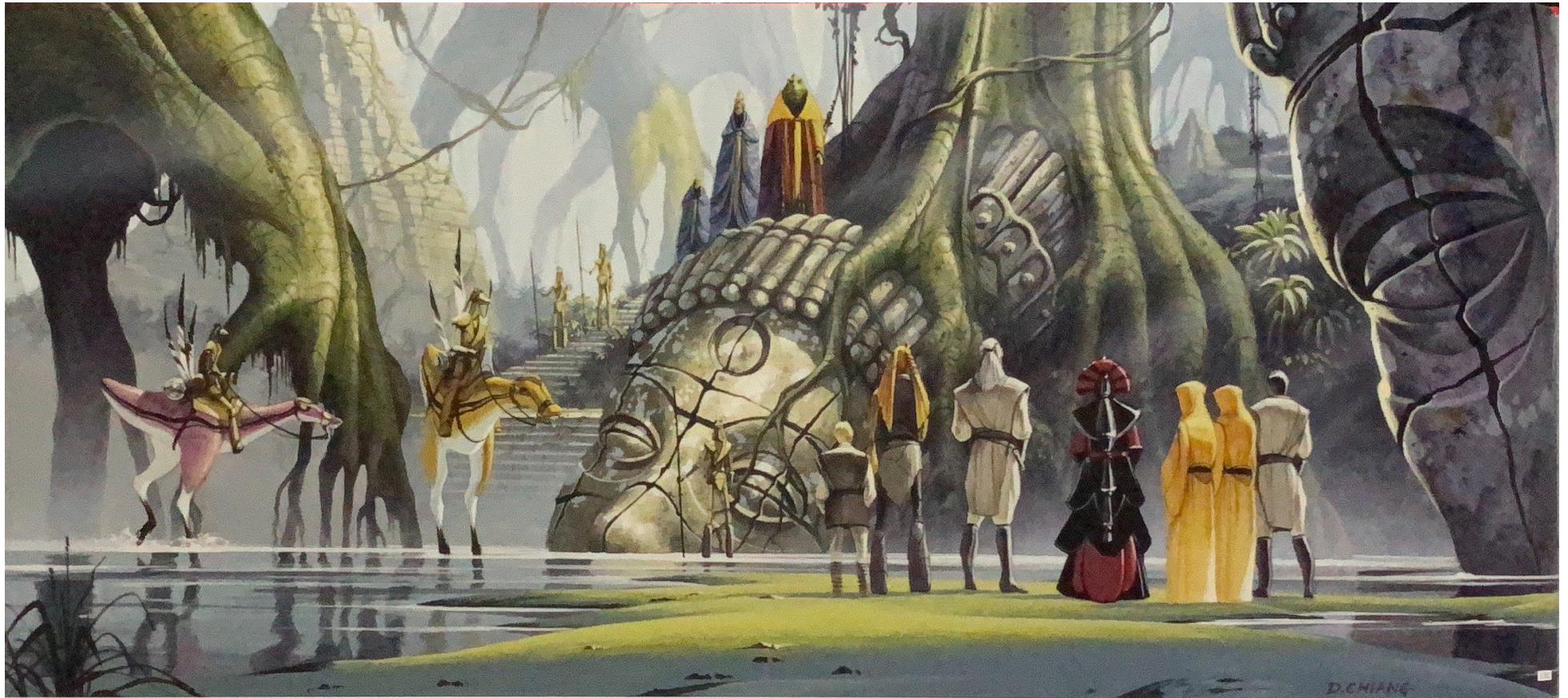
2.359 Storyboard generated on May 7, 1998, and filmed on August 10. Padmé tells Anakin, "The queen has reached a point where she must go to war." The scene was shot but was eventually discarded from the movie.

2.360 Kenny Baker being fitted into R2-D2.

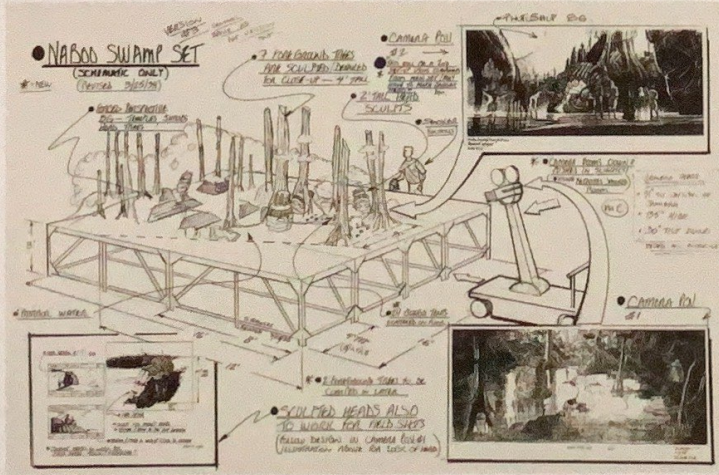
2.361 Doug Chiang's concept (November 20, 1996) for R2-D2's little mishap on the landing platform. Script: "ARTOO whistles a happy tune as he leans over the edge of the platform, watching the traffic. Suddenly, he leans over too far, and falls overboard. After a moment, he reappears, using his onboard jets to propel himself back onto the landing platform." The scene was shot but not included in the final edit, but R2-D2 flies around the Droid Factory in Episode II.



DCHIALA
R2 D2 R2R2TS
11-20-96
0779



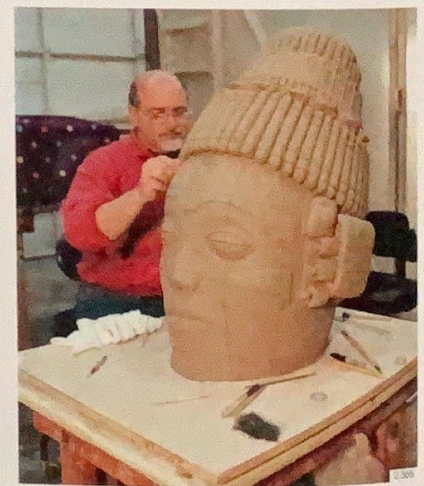
D. CHIANG



2.363

Modelshop Bid Form																																											
Job Name SWP	Job Type Feature	Date 3/26/95	Bid / Prod. Year 1995																																								
Project Within Job Naboo Swamp Set (version#3)		New Bid / Change Order? <input type="radio"/> Orig. <input type="radio"/> New Info.																																									
Project Type Sets	Subclass Planescape	Project # 444	Object Type Swamp Set																																								
Description Bid to build one Naboo swamp set. Set will be used for both (9) sets and (1) boom down camera shot.		Labor																																									
<ol style="list-style-type: none"> 1. Foreground stoneheads (3) 43MD 2. Foreground Trees (7) 63MD 3. Background Trees 20 MD 4. Background Vegetation 5 MD 5. Background Temples 20 MD 6. Foreground Vegetation 20MD 7. Foreground Church Tower 10 MD 8. Create 2nd set-up for #2 camera P.O.V. 10MD 		<table border="1"> <tr> <td>Model Size</td> <td>H</td> <td>L</td> <td>W</td> <td>in</td> </tr> <tr> <td>Projected Baseline Labor Expense</td> <td>\$47,077</td> <td>\$241.4</td> <td></td> <td></td> </tr> <tr> <td>Projected Employee Benefit Expense @ 4.5%</td> <td>\$19,851</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Break Down</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>M.D.</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td>\$62</td> <td>\$12,090</td> <td></td> <td></td> </tr> <tr> <td>Projected Total Labor Expense</td> <td>\$67,928</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Projected Final Cost (All Labor & Materials)</td> <td>\$87,413</td> <td></td> <td></td> <td></td> </tr> </table>		Model Size	H	L	W	in	Projected Baseline Labor Expense	\$47,077	\$241.4			Projected Employee Benefit Expense @ 4.5%	\$19,851				Break Down					M.D.					Total	\$62	\$12,090			Projected Total Labor Expense	\$67,928				Projected Final Cost (All Labor & Materials)	\$87,413			
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		Labor \$77,998	Final \$87,413																																								

2.364



2.365

“George’s big thing is always design something from reality, and put a little bit of artificialness or exaggeration to put it into another world. We took real trees that were 100 feet tall, and made them 300 or 400 feet tall, and added weird root structures. That’s all you need.”

Doug Chiang

- 2.362 Doug Chiang’s concept art for the meeting at the Gungan’s sacred place (August 8, 1997, 4.5 days).
- 2.363 Naboo swamp set schematic by Steve Gawley, dated March 25, 1998. It details the scale of the model, camera position, and the expected shot from the camera’s point of view.
- 2.364 The Modelshop Bid Form for the Naboo swamp set (Version #3), dated March 26, 1998, estimates 195 man-days to complete the work, with labor and material costs totaling \$57,413. These estimates were made for every model, and every version of the model.
- 2.365 Mark Siegal sculpting the sacred stone heads for the swamp model.
- 2.366 Lining up the camera to film the Gungan’s sacred place. Only the trees’ roots and trunks were required for the shot.
- 2.367 Final frame of the Gungan’s sacred place as the queen and her entourage approach.

along with the repeatability and control of computer graphics. It was very simple, for example, to make a particular part shatter into 20 percent fewer pieces, or to make some piece tumble twice as fast.

Matthew Wood / Supervising Sound Editor There was no music during a lot of the sequence, so it was fully a visual and sound effect-driven scene. This was probably the most difficult scene to design, and Ben worked on it for a long time right up until the final mix.

Ben Burtt I tried to give each vehicle sound a personality. I considered the pilot of the craft and whether I wanted the audience to like or fear a certain ship or character. A pod sound can be powerful, angry, comical, smooth, cool, hip, old-fashioned, goofy, or dangerous.

Matthew Wood Ben has a pretty huge library of effects that he has amassed over the years. Ninety percent of the stuff we used was pulled from his library and digitally formatted for editorial and design.



2.367



2.360

George said, “I really want a Ferrari, a Porsche, this boat, this aircraft,” so I went out to Willow Springs raceway and recorded exactly what he wanted. I put microphones in cement tubes in the middle of the road. It made this weird, ethereal sound combined with the car racing.

Ben then took those files and using a Synclavier, a Kyma workstation from Symbolic Sound, and a Pro Tools system, layered them all together to make composite effects for the editors.

Anakin’s podracer used sound from a Porsche, while Sebulba’s came from a F-51 Mustang flyby mixed with a cigarette boat on San Francisco Bay that Lucas asked to perform maneuvers.

On November 25, 1997, Lucas reviewed the footage of the podracer sequence and listed all the shots over eight pages, making notes and corrections where necessary. Lucas deleted 47 shots but added 40, mainly reaction shots to include Jar Jar, C-3PO, and Kiffster, as well as more close-ups of Anakin in his podracer.

March 2, 1998

The first cut of the film was completed on February 24, 1998. Its running time was 02:06:34:15, consisting of 2,175 shots, of which 1,919 required VFX.

Pickups were needed to complete the re-edited scenes and the flight between Darth Maul and the Jedi so these were shot at Leavesden from March 2 to 7.

Paul Martin Smith On pickup shoots, they’d have the list of everything they needed and they’d have a tape of what the element was on the set so they would reshoot and reframe as per the tape. They’d send the shots back to me and I’d cut in the one I liked best.

There were 119 setups over the six days covering moments from the whole movie, from scene 2 (shots of the back of Qui-Gon and Obi-Wan in the Republic Cruiser) to scene 178 (Yoda and Mace Windu at Qui-Gon’s funeral, reshot with Yoda’s hood down). Other key moments shot include Darth Maul’s introduction as he steps into the hologram (scene 53), Maul’s jump from the speeder on Tatooine (scene 110), the battle on the power generator walkway (scene 166), Obi-Wan’s reaction to the death of Qui-Gon (scene 171), and a new scene where Obi-Wan declares to Yoda that he will fulfill his obligation and take on Anakin as his Padawan (scene C177).

A camera fault was discovered on the VistaVision camera, which meant that shots taken on March 3 and 4 had to be retaken. After further problems on March 5, it was agreed with John Knoll that the VistaVision shots—the larger format was for VFX shots—could be shot on 35 mm film.

"I adore Star Wars. I think it was Derek Jacobi that said months ago that he would be a grain of sand to be in Star Wars, and that's the general feeling in the profession."

Brian Blessed



The third cut of the film was locked on March 13, 1998, with a running time of 02:17:42:06—11 minutes longer.

March 30, 1998

Steve Gawley / Model Supervisor I started in April 1997, and my responsibility is to provide miniatures of sets and models. The effects supervisors decide what will be a practical model or digital, and then they give us a call. They tell us their needs—it's to be seen from so many angles and in so many shots—and I'll draw up a schematic based on the design and estimate the cost and the amount of time. And then they say, "How about sooner?"

We are busier now than we've ever been in the model shop because it is often quicker to design and create in the three-dimensional world than in the digital world. We provide reference models that are scanned by the digital folks, and background sets that will have the digital characters added. As a matter of fact I've had times when I can't find enough people.

The Podrace hangar was the first model to be set up and shot, from February 3 on the Windward stage, while the Trade Federation hangar bay was shot on the Vista Cruiser stage from February 9, both supervised by John Knoll.

On March 30, 1998, filming began of the Trade Federation ship for the opening scene as the Republic Cruiser approaches

it. This ship and the Droid Control Ship were filmed up to August 17 on the Vista Cruiser stage under the supervision of John Knoll.

John Knoll The space scenes were executed as a mixture of miniatures and computer graphics. The queen's ship and the Naboo fighters were done using computer graphics in part because of the chrome surfaces that needed to reflect their environments. Because the space battle involved choreographing large swarms of Trade Federation and Naboo fighters, computer graphics was the most expedient option. Since the Trade Federation battleship was a motion-controlled miniature, we developed an automatic translator to convert camera moves from the motion control system to computer graphics and vice versa. Custom animated reflection environments were created for all scenes of the chrome ships. For example, when

2.368 Brian Blessed: "I'm playing Boss Nass, the King of the Gungans. It was a marvelous moment when George Lucas said, 'They want your help. They're all kneeling in front of you, Brian. And all these Naboo, about 50 million Naboo, they're all kneeling in front of you, Brian, and they're asking for your help.' I'm a kind of reluctant hero in it and I've got a massive army. And he said, 'What are you going to say when they ask for your help?' And I went [Blessed makes a hilarious aquatic bellow], and he said, 'Bring that, I knew that I was employing a mad bastard. Bring that, that's exactly what I wanted, Brian.'"

2.369 Shooting in Whippendell Wood in Hertfordshire, England, Jar Jar leads the queen to Boss Nass and is stopped by a guard on a kunda. The wooden replica gives the cast the correct eyeline for the shot as the crew member says the lines.

2.370 Padmé reveals herself to be the queen and kneels before Boss Nass to beg for the Gungan's help.

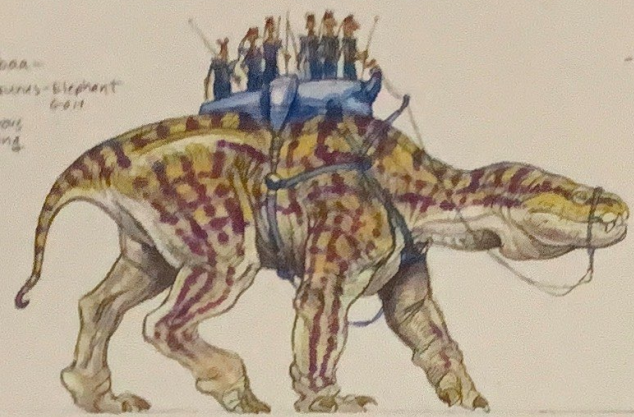
2.371 The sculpture of Jar Jar's head is mounted on a C-stand as a lighting reference and Ewan McGregor is holding a mirrored ball which ILM will refer to in postproduction to achieve consistency between the lighting of the scene as filmed and the CG elements that will be created.





Errol Whistler
8-14-46
Goongan + Naboon Cavalry and
Parade mounts

- Pambaa -
Brontosaurus - Elephant
Gait
powerful, ponderous
walking



- Kaadu -
ostrich - Gallinaceous
Gait
2-legged walk
+ run



- misc. cavalry Best
horse - Equine gait
galloping + leaping
quick turns + pivots



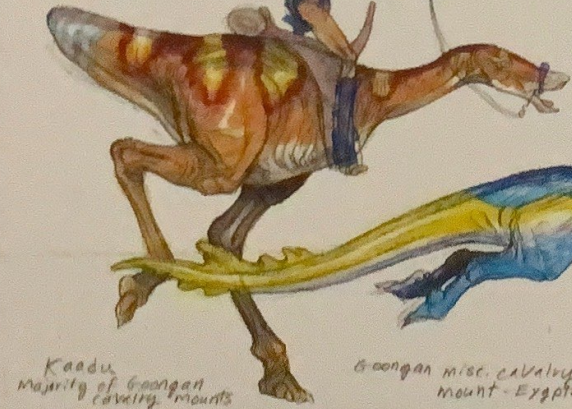
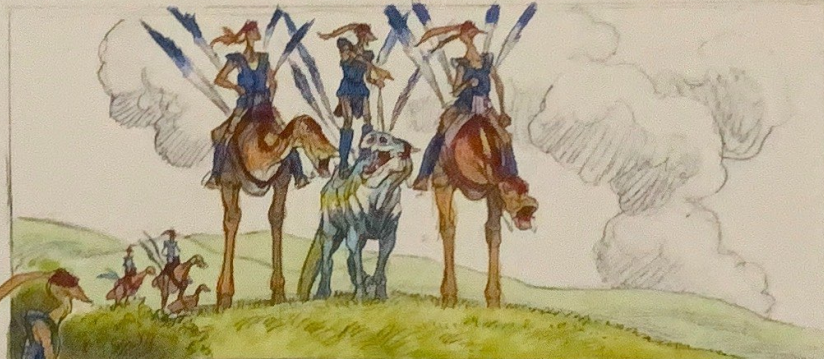
Naboon riding best
Feline gait -
rotary gallop
trot
loop



Naboon - 2 leg best
Feline gait -
rotary gallop
trot
loop



misc. small
fast, agile
flare



Kaadu
majority of Goongan
cavalry mounts

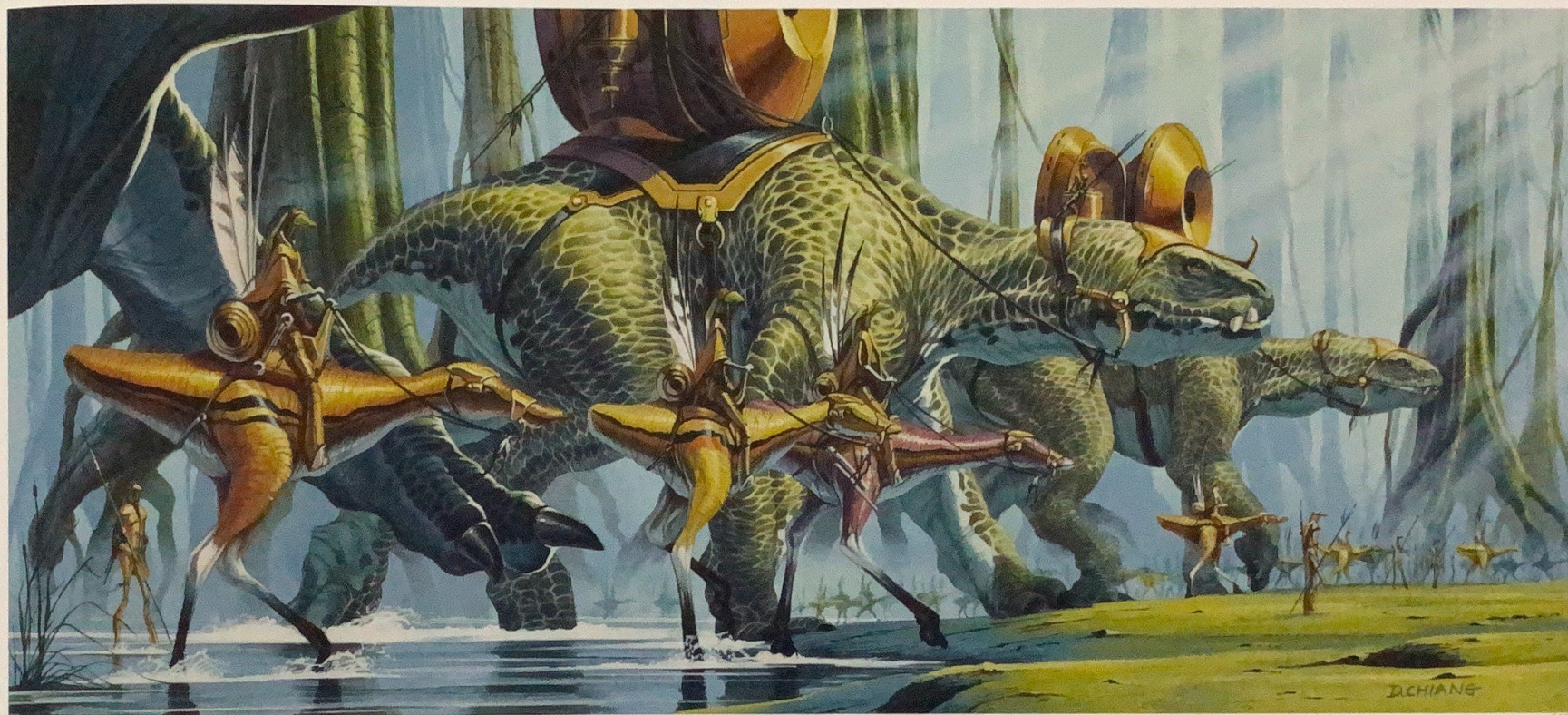
Goongan misc. cavalry
mount - Egypt - Arab



Padma
Parade mount



Naboon
Official + Parade mount

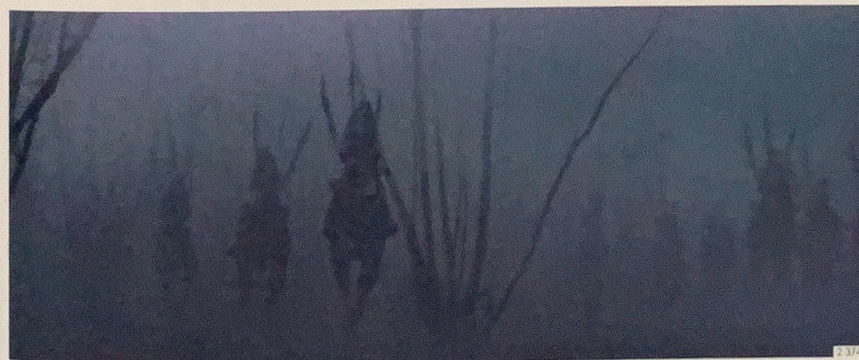


2.372 Terryf Whillatch's concept artwork for Gungan and Naboo cavalry and parade beasts (August 14, 1996).

2.373 Dong Chiang's artwork depicting the Gungan army emerging from the swamp includes the lumbering fumbas, based on a dinosaur concept, and the kauda, inspired by an ostrich (September 16, 1996, 6 days).

2.374 The Gungan warriors emerge from the swamp in a scene that is reminiscent of the films of Akira Kurosawa, a director much admired by Lucas.

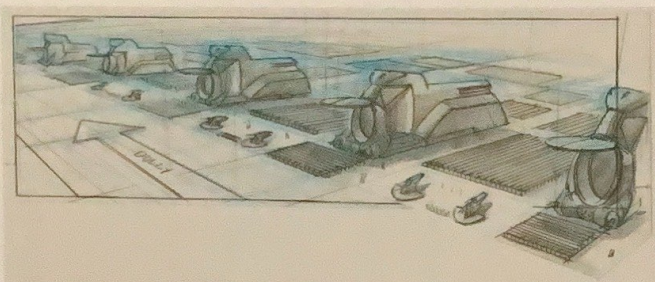
2.375 Final frame of the Gungan army marching to battle, featuring a fully CG cast of thousands.



2.374



2.375



2.376

- 2.376 Ed Natividad storyboard showing the camera tracking past the MTIs as the droid army prepares for battle.
- 2.377 As the droids prepare to attack, the Gungans erect an energy shield for defense.
- 2.378 This digital fax from digital effects artist Daryl Manton to Dennis Muren shows how the team changed the number of and positioning of fambau and other elements to find the most dramatic and logical compositions.
- 2.379 Jay Shuster suggested several ways for the droids to be deployed from the MTI (October 10, 1997).
- 2.380-381 CG render and final frame of the droid army being deployed. Dennis Muren: "The CG droid racks hold over 100 powered-down droids and emerge from their huge transport vehicles to lower the droids to the ground. The racks were designed to actually function as they appear, which was quite a mechanical challenge."
- 2.382 The droid army unfurl and stand in formation, like the skeletons that came to life in Jason and the Argonauts (1963).

Anakin's starfighter flies through the Federation battleship's hangar, we rendered the hangar as six 90-degree field of view cameras: top, bottom, left, right, front, and back. These were stitched together to create a 360-degree view of the environment around Anakin's ship.

Plasma

George Lucas The Gungan battle was like the Charge of the Light Brigade. It illustrated a theme that repeats in my films—a non-technological society taking on a highly technological society. Like the Vietnam War, the people without the technology were the victors because they had the heart and soul. So it's another version of the Ewok battle.

Dennis Muren This sequence was primarily made up of thousands of animated CG characters, miniature battle tanks,

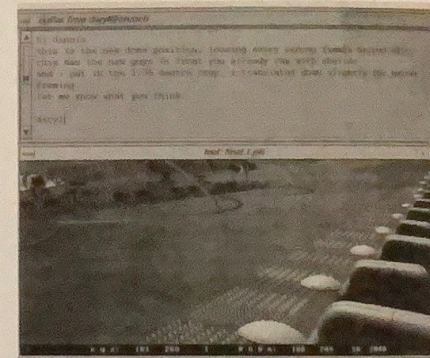
enhanced still-photo backgrounds, and dozens of 1/3-scale pyro elements.

The challenge for me was to do the shot design. First, we looked at war footage to see what reality was like.

Paul Duncan Doug Chiang drew up helicopter shots of the armies massing, and there were action and gag ideas supplied by Ed Natividad and Iain McCaig.

Dennis Muren I distilled it down to make it easier to understand, and also so that we could do it with the tools we had and in the time we had.

For the background, we found a place out in Patterson, Southern California. The mountains are green in the background because it had just been the rainy season. We shot 250 pictures and we would cut-and-paste the hills and valley floors together to give the size needed for the battle. Most of the clouds came from stills shot near Carlsbad, New Mexico. By treating the still-photo backgrounds as composite elements, we were able to



2.378



2.377

change and add shots as needed. The same hills could be reused with new clouds and look different.

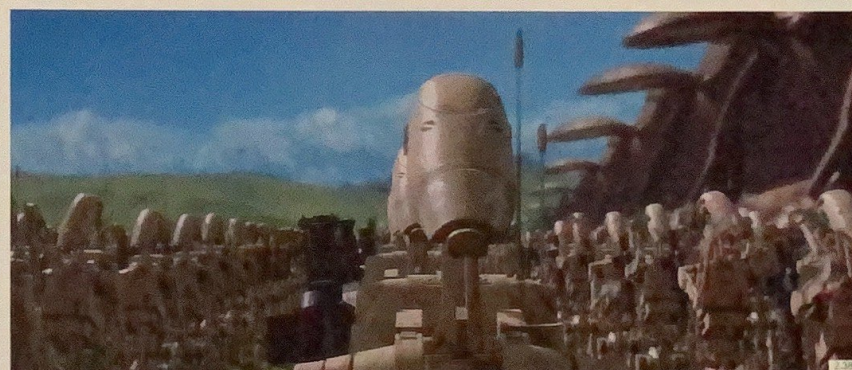
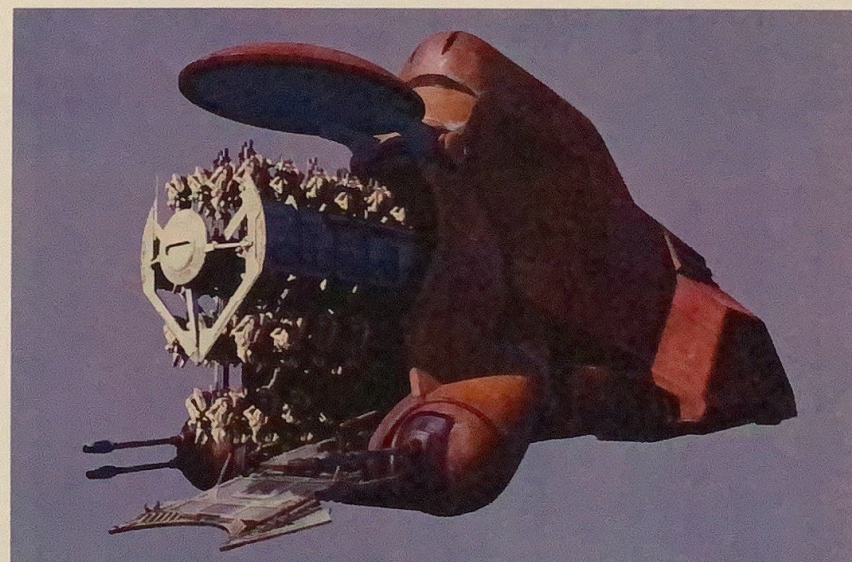
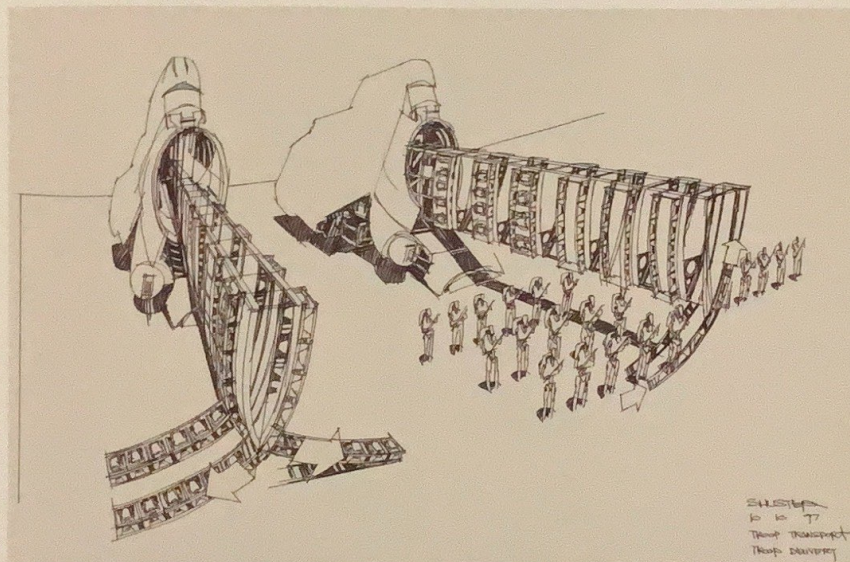
Rob Coleman I can't tell you what it's like to get handed a sequence like this. The entire sequence exists only as a visual effect. A typical line from the script could read, "The Gungans march to meet the Battle Droids." That simple statement translated into months of work to create the amazing shot of 7,000 computer-generated Gungans and their various computer-generated animals parading off to war. Nothing moving in the shot is real.

Dennis Muren I repeated shots, like you do in live action, where you go back to the same angle, so that the audience can follow the action. For example, I have a shot of a bunch of the droids walking toward camera, then a few shots later I'd have exactly the same angle and a droid is hit and falls down. If I had a different angle, it would take longer for the audience to figure out where they were and that's time lost.

The Gungans had huge shields that cover and protect them. It's made from the same technology as their underwater city bubbles. George started talking about it one day, and said that the Gungans mined the plasma that powered the city and generated the light. It could be molded into a hard, round object with the energy sealed inside, and a hard crust that would crack and spew out the energy plasma that would short out the energy circuits of the droids. It's interesting to me that he'd thought out how they were mined—and George does that with so many things. Everything has that sort of history to it. They're not just neat ideas—they're logical ideas.

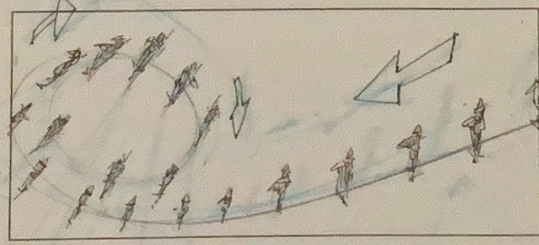
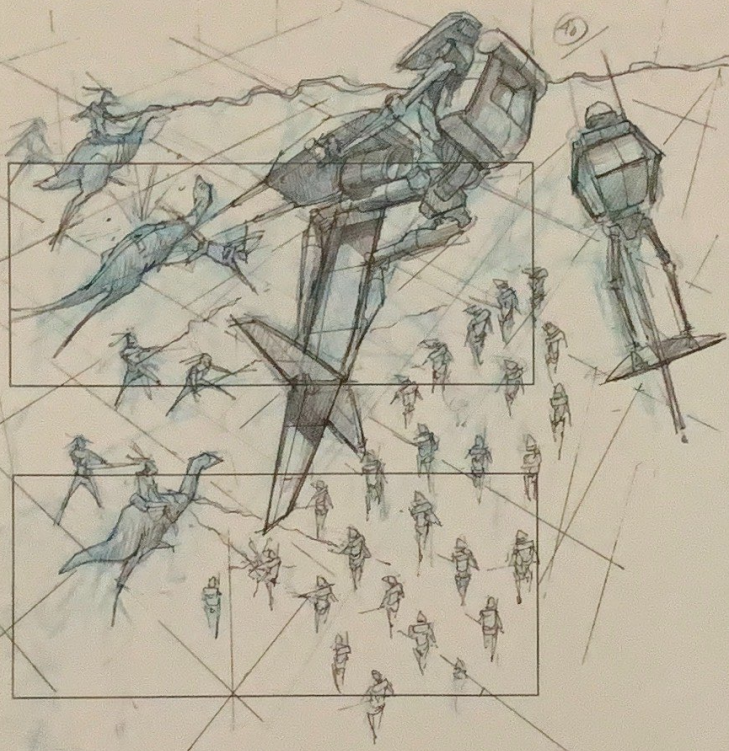
“One of the challenges was the scale. Like, how the heck are we going to put 7,000 Gungans on the screen?”

Dennis Muren / Visual Effects Supervisor



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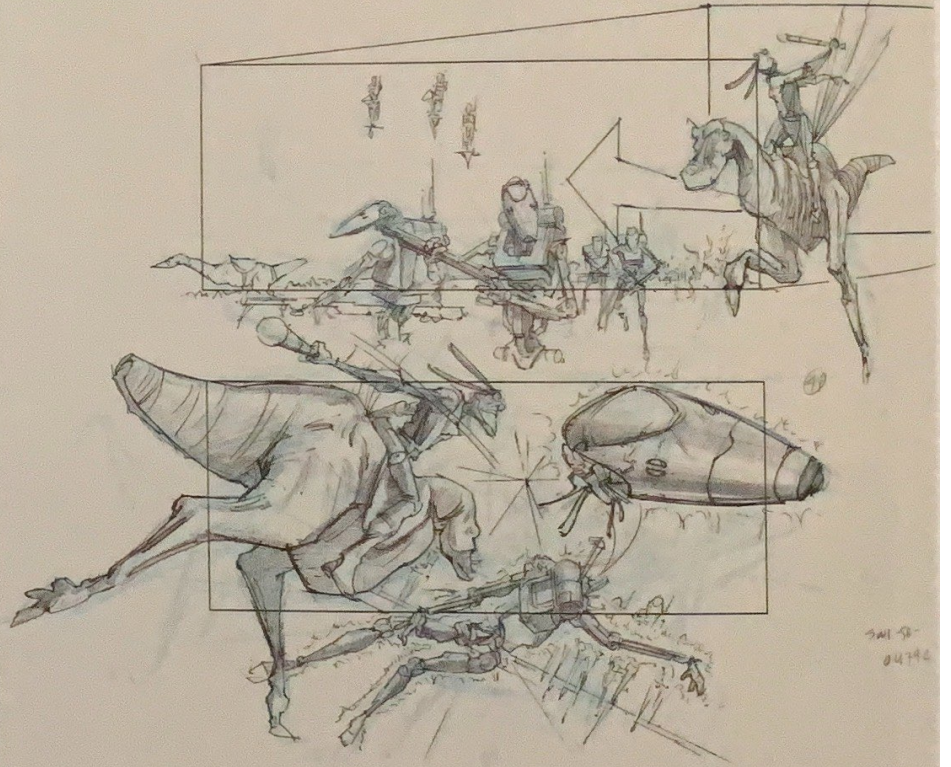
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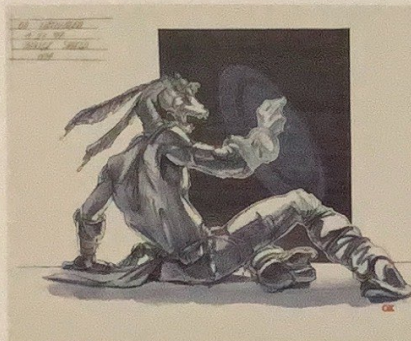
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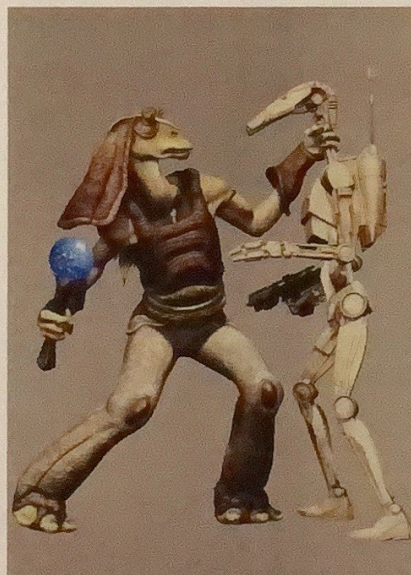
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2.385



2.386

August 10, 1998

The Anchorhead Arena model was filmed from July 7 to August 11, 1998, supervised by Dennis Muren and John Knoll, with additional filming on October 2 and 5.

John Knoll Anchorhead Arena was built as a 40-foot long miniature. It was photographed outdoors for a real sunlight look. The stands were filled with colored Q-tips to provide a reasonable crowd texture for very blurred or distant shots.

Michael Lynch / Chief Model Maker It had an airplane hangar on a track to cover it up at night. It was placed on a rotating base so we could position the set properly in natural sunlight.

John Knoll Most of the shots inside the stadium were populated with live-action extras shot in groups on digital video.

These were filmed on August 4–6 with prosumer digital cameras. There were five days of reshoots and new scenes at Leavesden on August 10–14, 1998.

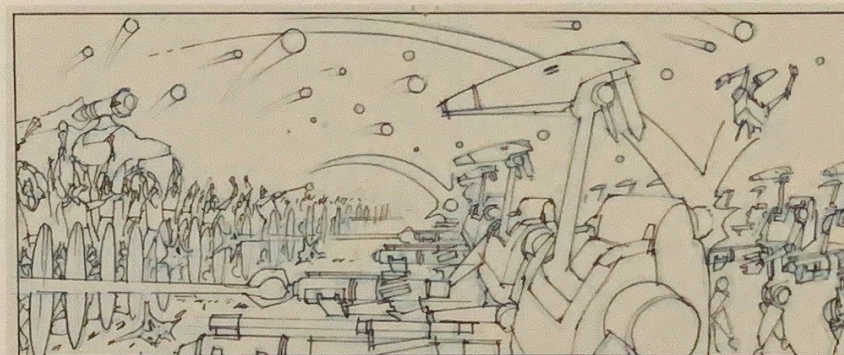
George Lucas We were trying to develop digital cinema at the same time as we were preparing and shooting the movie. We were testing cameras, projectors, all that stuff.

For new scene 128A, shot on August 10, Anakin goes to see Padmé on Coruscant but instead meets the queen in her dressing room. As a test, some of this scene was shot on a Sony HDC-750 digital camera, which ran at 30 fps, and recorded onto a HDD-1000 videotape recorder. Likewise, on August 12, some of new scene 83A, set on the slave quarters porch at night, where Qui-Gon takes Anakin's blood and tests for midi-chlorians, was shot on the HDC-750.

Rick McCallum We were worried about pulling this off because in the intervening months Jake had grown about four inches.

George Lucas I had originally written and shot Qui-Gon getting the blood sample for the midi-chlorian count in the arena hangar, but I rewrote it and put it on the balcony at night so that Anakin could talk about the stars. I wanted to get a sense of Anakin's future, and his dreams, and where he expected to go, so I needed this introspective moment.

I like the theme of symbiotic relationships that goes throughout the whole movie, of people helping people, and the idea that there may be a completely different life-form living inside your body, completely independent of you, but has some influence over you.



2.387

2.383 Ed Naticidad storyboard ideas showing the dynamics of the battle between the droids and Gungan. Here droids on STAPs launch an aerial attack to support the ground troops.

2.384 Although the STAPs can pick off the Gungan one by one, the Gungan fight back by zapping droids with the energy globes on the end of their staffs.

2.385 Ed Naticidad's design for the Gungan personal shield (April 23, 1997).

2.386 Gungan versus droid in hand-to-hand combat. Many movements of performance actors were captured, adapted for size and skeletal features, then replicated for the battles. The Gungan is wielding a blue plasma energy ball, known as a booma.

2.387–388 Storyboard circa October 1998 and final frame of the droid and Gungan confrontation. The droids have conventional blasters whereas the Gungan use booma projectiles.



2.388



2.389

Fred Meyers After the Leavesden shoot, the one-inch analog masters and deck shipped to us at ILM, where we digitized the 1920 x 1035 60i material into four Quickframe SD servers, reconstructed RGB DPX frames, and de-interlaced and refined the shots to 24 fps for editorial and VFX.

Paul Martin Smith There are two shots in that sequence that are digital, a close-up and a wide shot. If you look at it carefully, the footage is problematic—the contrast is slightly different—but only because of the conversion from 30 fps to 24 fps. But Sony is in the process of making a couple of 24 fps cameras for us for the next film.

September 25, 1998

Jeanne Cole / Publicity / E-mail to all Lucasfilm

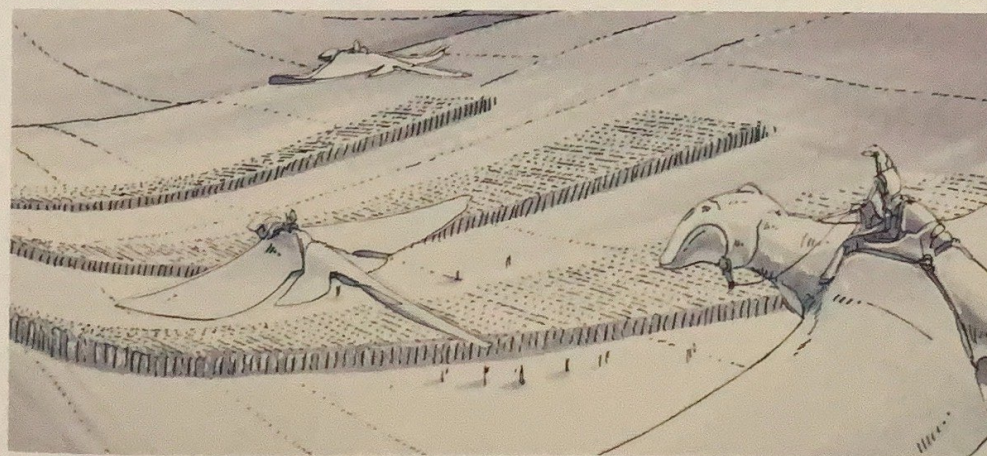
Just a few minutes ago the following announcement was posted on www.starwars.com:

SEPTEMBER 25, 1998: We're happy to report that George Lucas has decided to name the new movie *Star Wars: Episode I—The Phantom Menace*. As announced earlier, the new movie will appear in theaters in the United States and Canada on May 21, 1999.

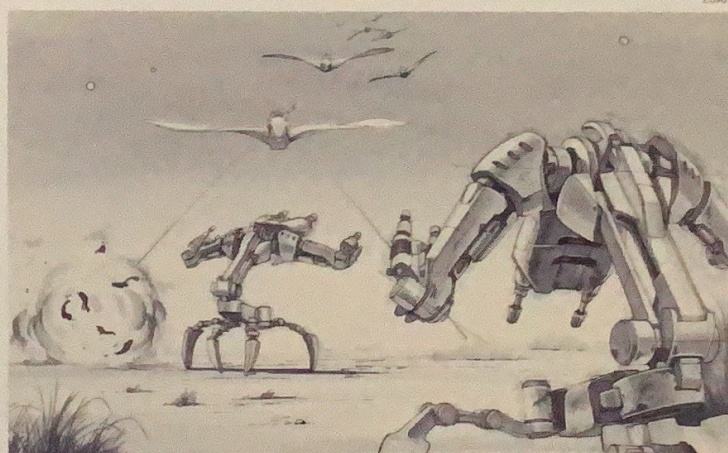
- 2.389 George Lucas tried to include air whales in *The Empire Strikes Back* (in an early script Luke is helped at Cloud City by a noble race of aliens riding air whales) and *Return of the Jedi* (air whales transport the heroes to the rebel base in an unused scene). Here Terral Whitlatch has the air whales as part of the Gungan air force (September 20, 1995).
- 2.390 Doug Chiang depicts a sky battle between druids on their single trooper aerial platforms and Gungan-mounted air whales (April 10, 1996, 2.1 days).
- 2.391 On March 25, 1996, Doug Chiang completed an extensive series of storyboard proposals for the Gungan battle, showing the forces of both sides mobilizing into position, including this "helicopter" shot of a Gungan air force over their ground troops.
- 2.392 Chiang also explored the idea of the Naboo riding the air whales (August 3, 1995). The air whales were not used in the film, but they are the basis for the *aiwha* (a contraction of "air whales") on the planet Kamino in *Attack of the Clones*.



2.390



2.391



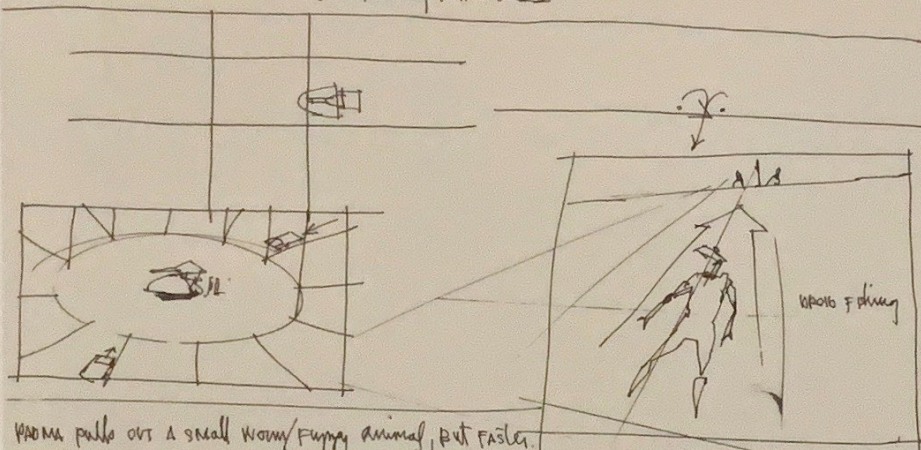
2.392

Naboo Palace Battle

NABOO ARMS - Palace Guards + Police
Police cars based on Starline (car-like)
Palace?

'NAVY SEAL' ATTACK (Keep them stuck)
TRUCKS / JUMP TRUCKS, VANS (FOR 4-5 TO SHIP) COMMERCIAL VEHICLE / PICK UP TRUCKS
Just stacks on truck
Guns mounted to trucks

Street battle
(Full Nohel sack)



WIPPO pulls out a small worm/furry animal, but faster.

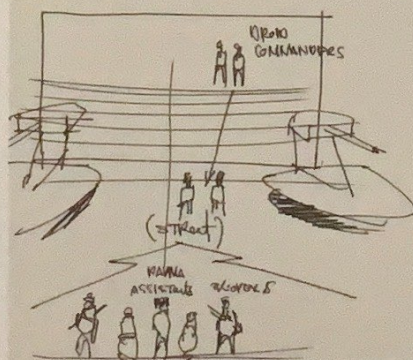


RUNNING AROUND SQUARE
they miss... occupied

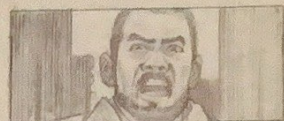
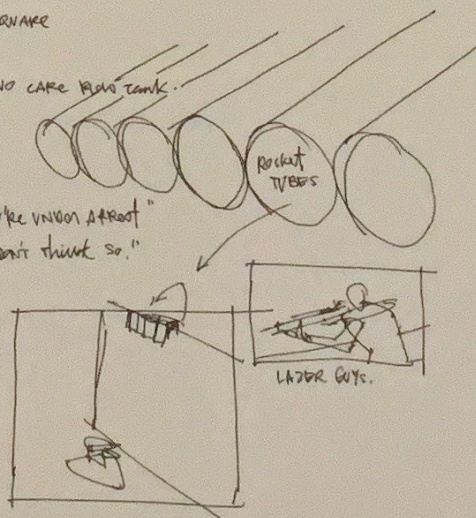
TWO CARS pull up to square
BLOW tank up!

Grenade blows at TWO CARS AND tank.

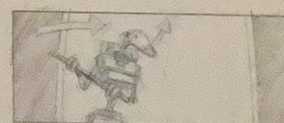
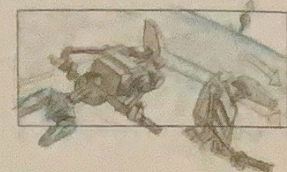
@ entrance of Palace



"You're UNDER A ROOT"
"I don't think so."

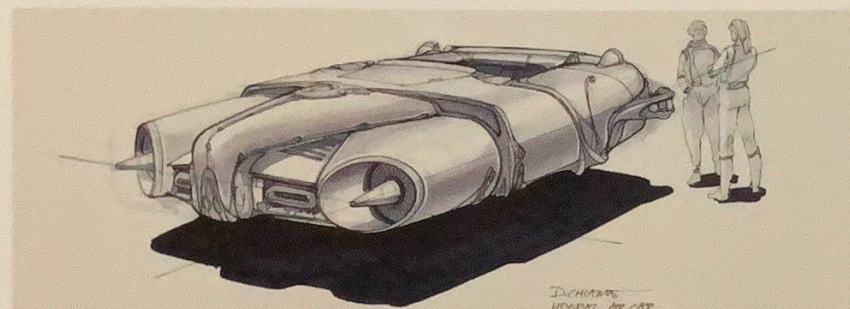


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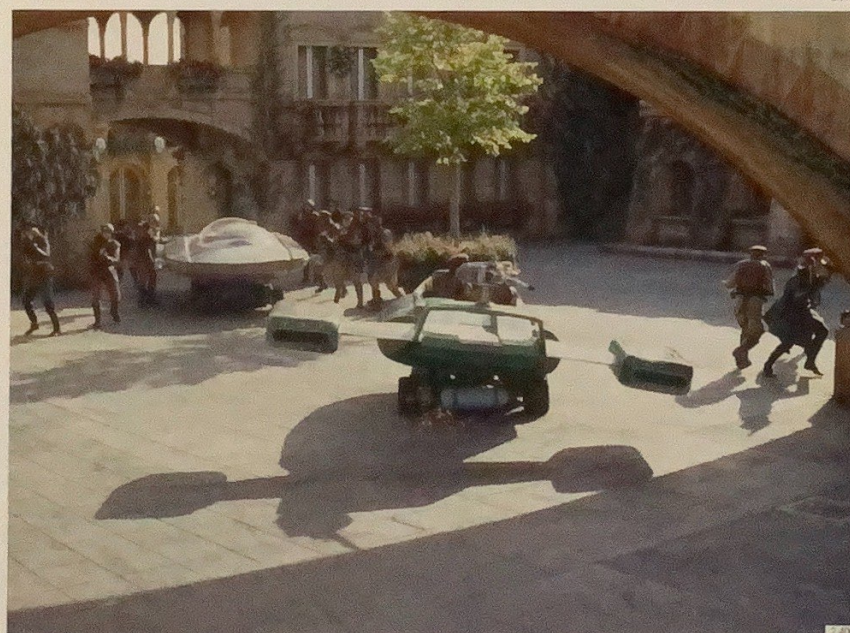




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- 2.393 Story notes taken by Jay Shuster during a meeting for the Naboo attack on Theed. The queen and her entourage, including the Jedi, must distract the droid guards with a street battle, enter the hangar, and reclaim the Naboo fighter planes to attack the Trade Federation ship in space. Originally the sequence was far more complex than in the finished film. One idea, which was storyboarded, had the queen's little pet run under an AAT, drop a grenade, and run off as it exploded.
- 2.394 Benton Jew's storyboard shows an attack on an AAT using rocket tubes overhanging a roof. Note that Captain Panaka in the first panel bears a more than passing resemblance to Toshiro Mifune, lead actor in many of Akira Kurosawa's movies.
- 2.395-397 These Ed Natividad storyboards show the Naboo using a very powerful magnet to pick up and drop a droid, leading to its destruction.

- 2.398 The attack by Naboo troops in the Theed plaza has resulted in the destruction of one of their AATs.
- 2.399 Theed speeder concept by Doug Chiang (February 2, 1995).
- 2.400 Gian speeders and Flash speeders were used by the Naboo soldiers to attack the droids and provide a distraction so that the queen and the Jedi could access the Theed hangar.
- 2.401 Full-size model of the AAT in the Theed plaza, with Lloyd, McGregor, Portman, and Neeson, at left, waiting to enter the hangar. The set for the plaza was built one story tall on the Leavesden lot, with additional buildings added digitally in postproduction.



2.401

“On the starfighter alone we went through easily three dozen drawings.”

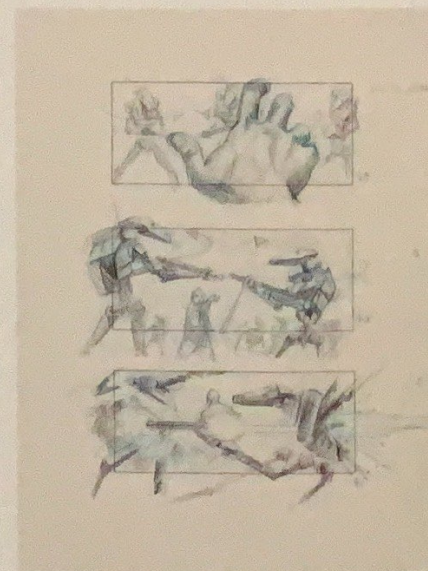
Doug Chiang

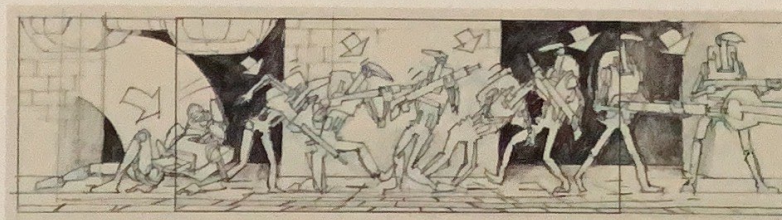


November 12, 1998

Scene 166, part of the battle between the Jedi and Darth Maul along the Power Generator Walkway, was not straightforward. The Change Notes show that after the live action was shot, the background was added on March 19, but on September 24 Lucas expressed concern with the design of the light tubes, and on November 12 requested they be “refilmed” by ILM.

Scott Squires This was a horrendous sequence to deal with. The design wasn’t totally locked down before live action was shot. This meant removing flashing colored lights from shots so they would work with the new design concept. Some shots were done with doubles and required face replacements of the real actors. The live action was filmed on a short section of walkway against blue screen. The rest of the environment was done with CG. Extensive use of rotoscoping was used for the lightsabers with special software to duplicate the look from the original.





2.404



2.405

films. Some scenes required replacement of body parts of the actors and doubles when they became obscured in airbags or other items.

The last change on the scene was on March 5, 1999, when the tube glow had to be fixed on shot JDB.166.027, where Obi-Wan grabs his lightsaber.

February 10, 1999

On February 10, John Williams started recording the film's score with the London Symphony Orchestra at the Abbey Road Studios.

John Williams The first time I saw *The Phantom Menace* was October 1, 1998. I began to write the score in the middle of October, so it gave me three months plus to write two hours of music for orchestra. Very difficult, just in logistic terms.

I would say, conservatively, that 90 percent of it is new. The remaining 10 percent are "quotes" from earlier themes. The first minute and a half has the "Star Wars Theme." In the middle there are very brief quotes of "Darth Vader's Theme," "Yoda's Theme," "Princess Leia's Theme," when there are hints of what they will become as the prequel advances. But the 90 percent that is new comes something like this: I was able to take some of the old themes and "de-compose" them — take them apart and write them in a sense backward.

"Anakin's Theme" is the kind of theme you would have for a young boy, very innocent, lyrical, and idealistic. But it's made up of intervals from "The Imperial March." I made Anakin's theme out of those intervals by inverting them or rearranging them rhythmically or accompanying them harmonically in a different way. It sounds familiar, very sweet, but if you listen to it carefully, there's a hint of evil.

"Duel of the Fates" is for the great sword fight at the end of the film. The decision to make that choral was just the result

of my thinking that it should have a ritualistic or quasi-religious feeling to it, and an introduction of a chorus might be just the thing.

Williams selected the following lines from the Welsh poem "Cad Goddeu" (The Battle of the Trees), and had them translated into different languages, including Sanskrit.

Cad Goddeu/English Translation / Lines 32-35

Under the tongue root / a fight most dread,
and another raging / behind in the head.

John Williams "Korah," "Rahtahmah" — I've chosen these Sanskrit words because of the quality of the vowels. The medium of chorus and orchestra would give us a sense that we were in a big temple.

I've been uniquely fortunate to accompany George on this great journey that he's on, which seems now to be a life's work journey.

2.402 Filming the Jedi and queen entering the Theed hangar on August 19, 1997. During one take a squib sparked in Natalie Portman's face, so she was taken to a specialist to check that her eyes were okay.

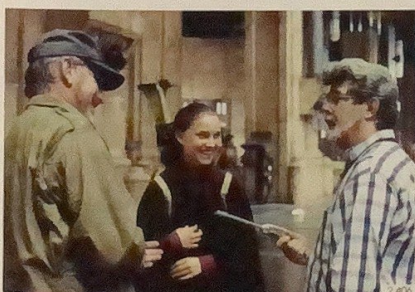
2.403 Natid-Idad storyboard for an unused sequence where the Jedi fight to get to the generator building, slicing off tank turrets and using the Force to make the droids fire upon each other.

2.404 Jay Shuster storyboard for an unused scene where Anakin initiates the comic demise of a number of droids inside the hangar as they all fall like dominoes.

2.405 Anakin hides inside the cockpit of a Naboo starfighter.

2.406 Steven Spielberg visits the set.

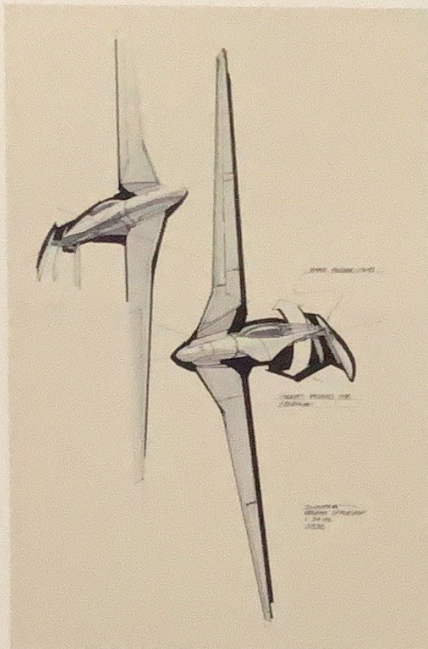
2.407 Final frame of the Naboo starfighters flying off to destroy the Droid Control Ship orbiting the planet. Anakin and Artoo are in one of the fighters.



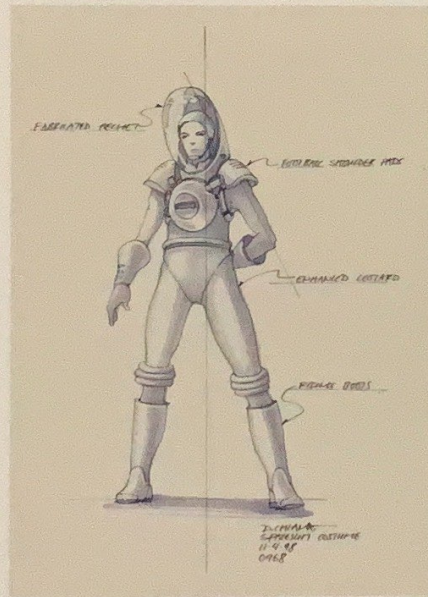
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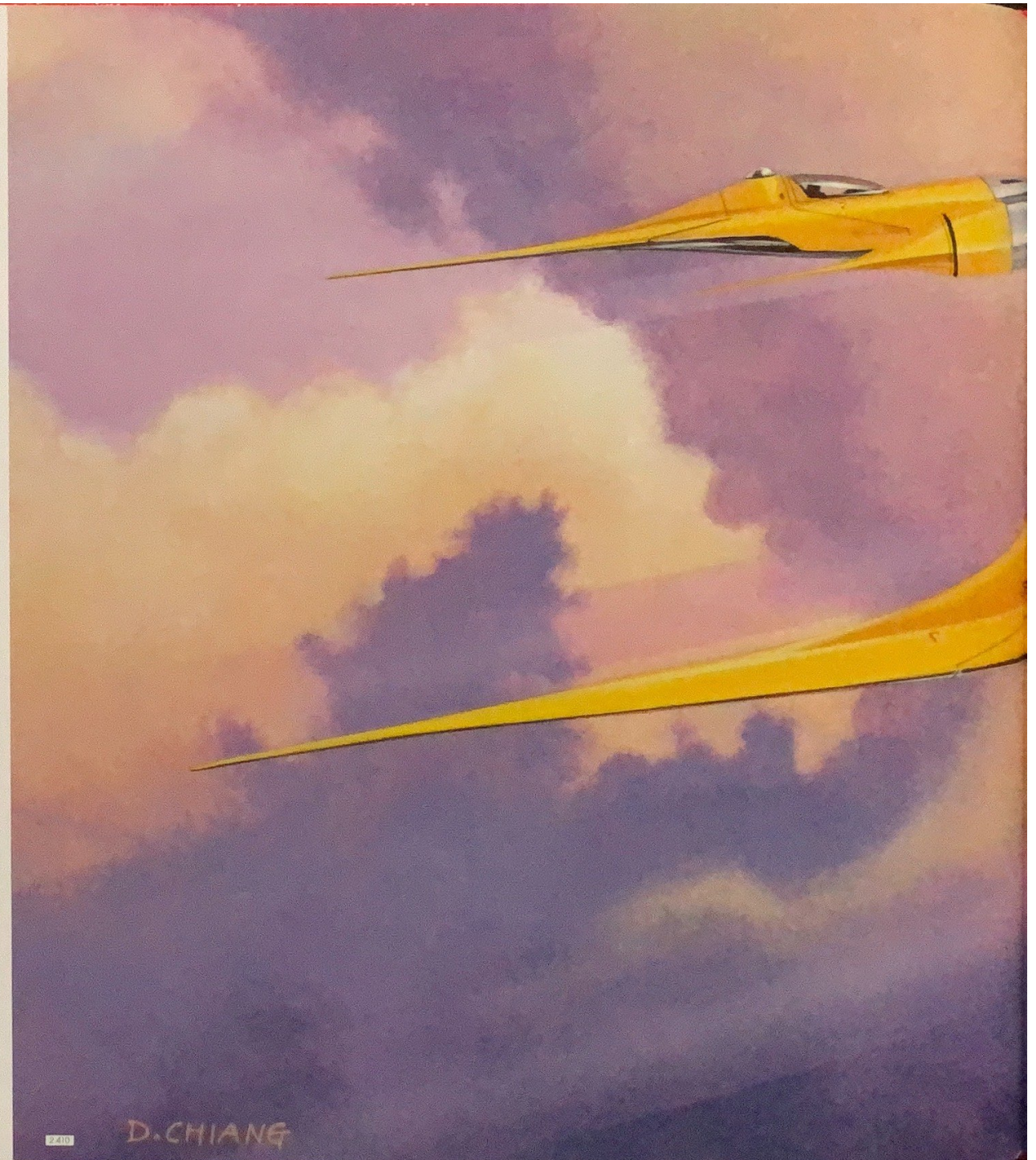
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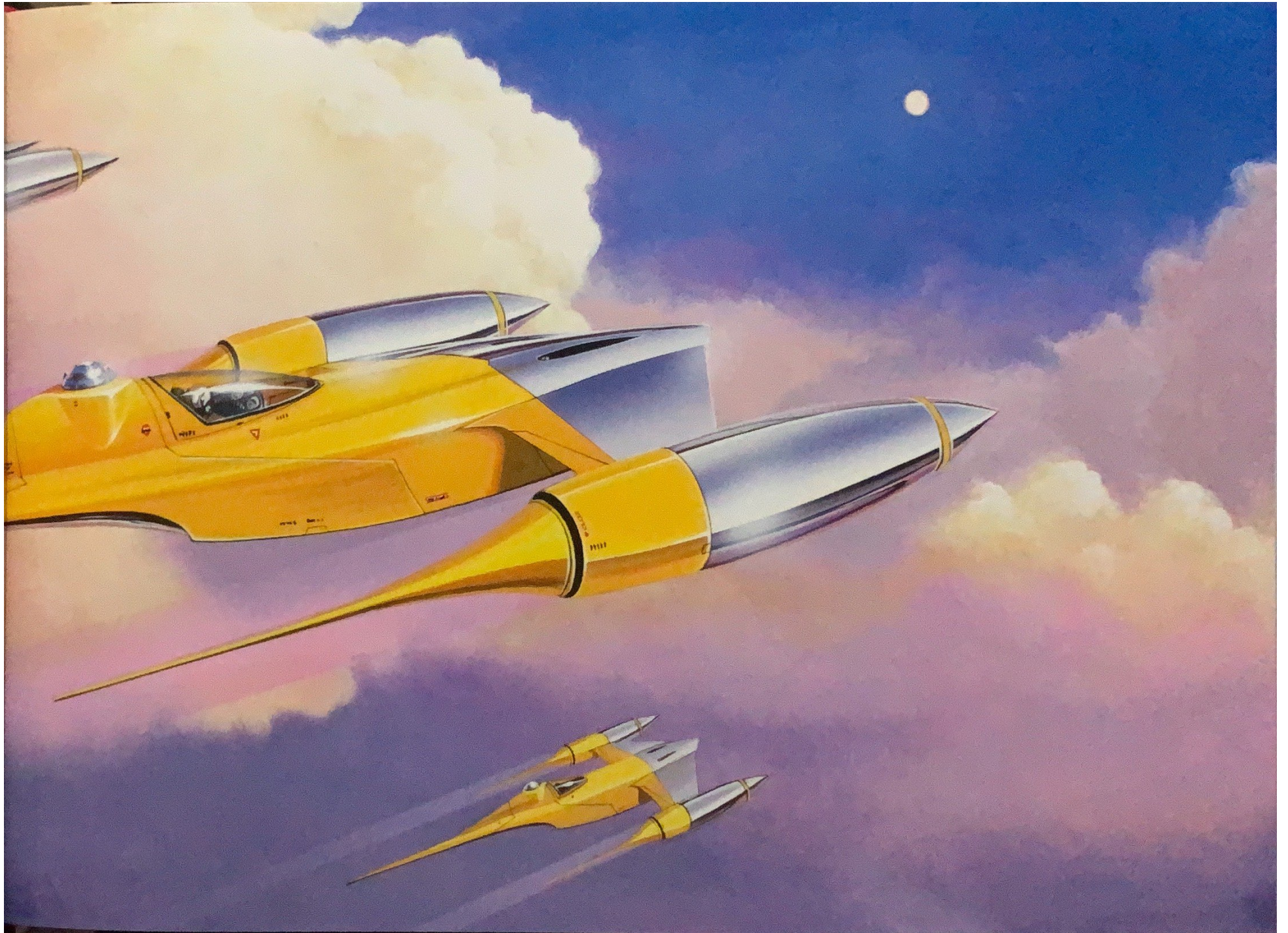


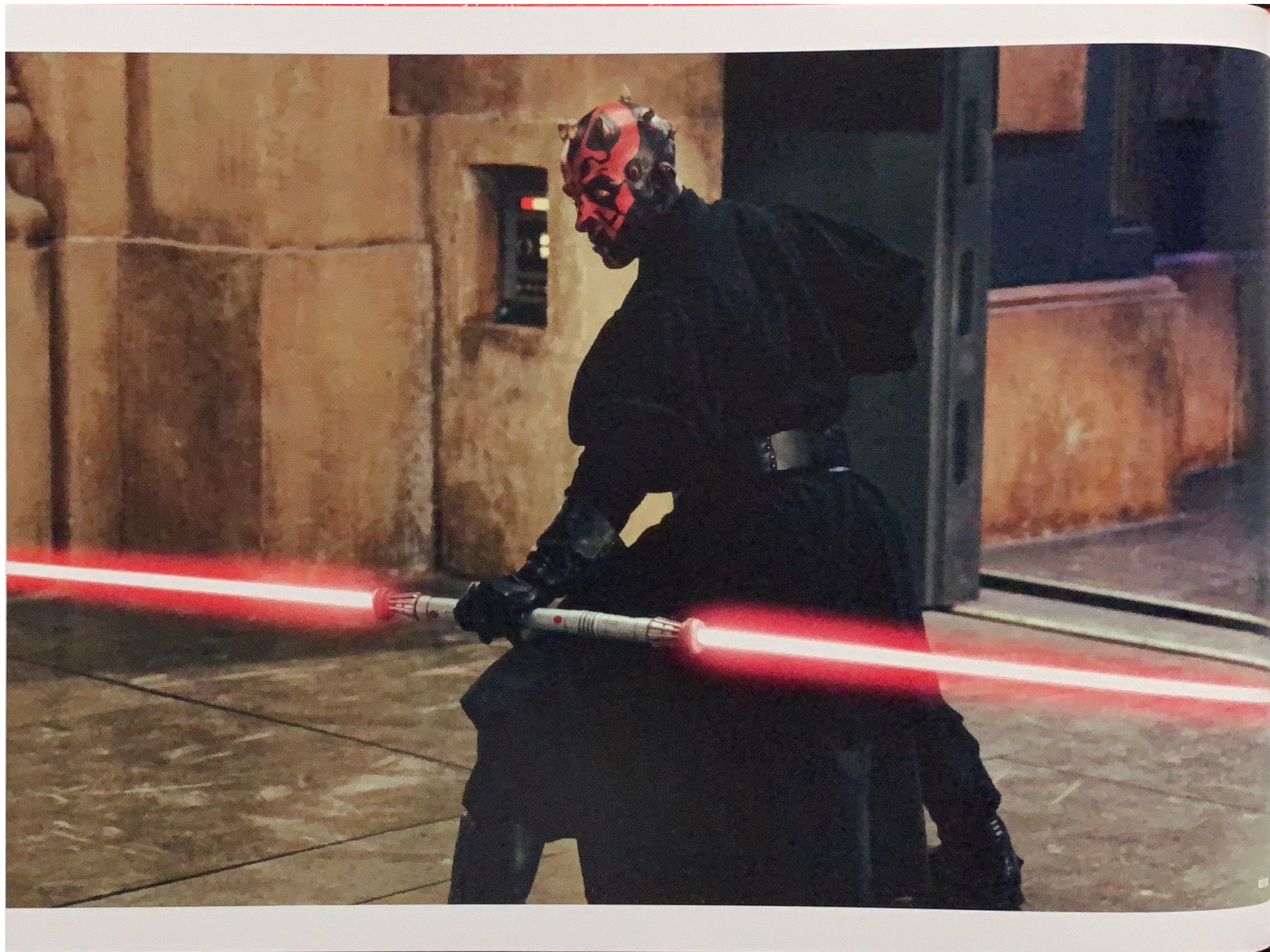
2.409



2.410

D. CHIANG





"Fighting someone single, all your attention is at that one person, but when you're fighting two, it's a lot harder because they come from different angles, not just straight lines. To me, it's more fun because I know that if I don't do this move I'm going to get hurt, so I have to react quickly. I get an adrenaline rush out of it."

Ray Park



2.408 Doug Chiang concept for the "Udopan Spaceship" as it was then known, where the wing and body of the plane rotated in relation to each other (January 29, 1996).

2.409 Chiang's concept for the Naboo spacesuit utilized readily available materials, like football shoulder pads, leotards, and riding boots, to keep costs economical (November 4, 1998).

2.410 The Naboo air force by Doug Chiang (July 22, 1997; 1.5 days). Chiang: "I initially thought that the starfighters would be very angular like the X-wing, but in fact we went to the other extreme which was sleek and modern."

2.411 Darth Maul reveals his double-ended lightsaber and prepares for battle with the Jedi.

2.412 Lightsaber choreography rehearsal with Liam Neeson, Ewan McGregor, and Ray Park.

2.413 The fight begins. George Lucas: "We finally get to see Jedi do what Jedi were designed to do. Before, in the first films, the sword fighting was extremely limited and was really between a fairly old Jedi who was ready to go and one who had been reconstructed and who was half human, half machine and not really very flexible. The only other Jedi who comes along is Luke, who's semi-trained by Yoda, but he never really gets the full-on training. So you've never actually seen a Jedi do what real Jedi do, until now."





March 20, 1999

Rick McCallum George called me up and said, "There's a wonderful opportunity here for Palpatine to acknowledge Anakin."

On March 20, 1999, Jake Lloyd, Ewan McGregor, and Ian McDiarmid were recalled to Leavesden to shoot an additional scene, 176A.

Rick McCallum Palpatine comes down the ramp, thanks Obi-Wan, and then his lips get very wet and juicy when he takes a look at Anakin and says, "We will watch your career with great interest." It's a wonderful throwaway line. That shot cost about \$18,000 to do. We shot that against blue screen and we used a digital matte painting, and then we zapped it in. That's how easy that stuff is now.

May 4, 1999

The last Change Notes, dated April 16, 1999, indicate the final minor changes to be made. For the scene in the queen's dressing room, John Knoll is to make a change to the queen's face so that it matches the previous shot.

Meanwhile Scott Squires is to extend the beginning of the Jedi Council scene by 10 frames and to sync the ships in the background to match.

Squires also had to add VFX to the shot in the final duel where Obi-Wan looks down as Darth Maul falls, turns off his lightsaber and runs to Qui-Gon—the shot had been omitted, and was now back in the movie.

The JAK animatics department had concluded their work, and David Dozoretz e-mailed staff to thank them for their work.

David Dozoretz / May 4, 1999 JAK FILMS STATISTICS — PRE-VISUALIZATION STAGE —

Total shots pre-visualized (approximately)—8,600 shots
Maximum shots/day—75 shots
Average # of takes/shot—3 takes
Minutes of footage produced—573 minutes (9.5 hours)
Bottles of Coke consumed—4,000
Nights working spent at the Ranch—40
Number of frantic phone calls received from the editor:
Martin—7,300

Number of years spent working on the film—4 years
Man-years spent working on Episode I—13 years

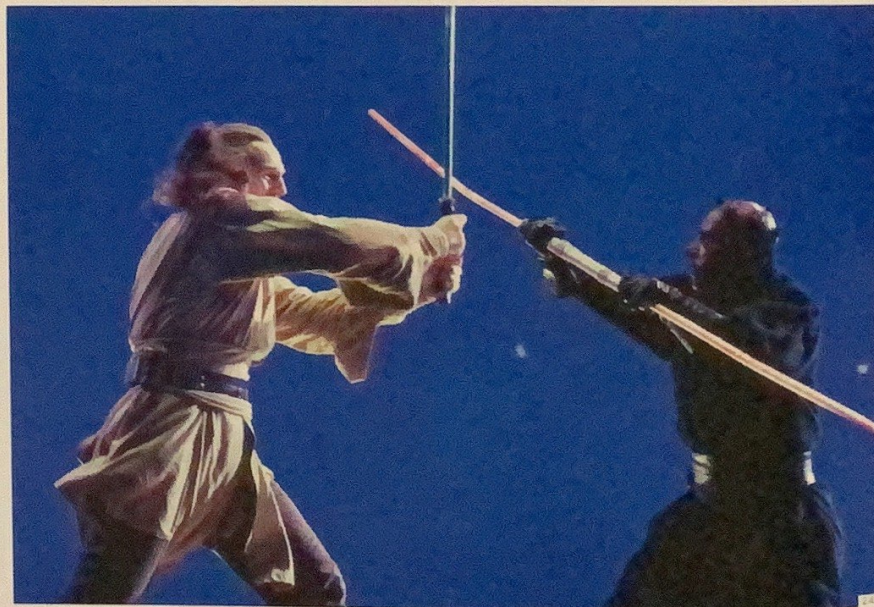
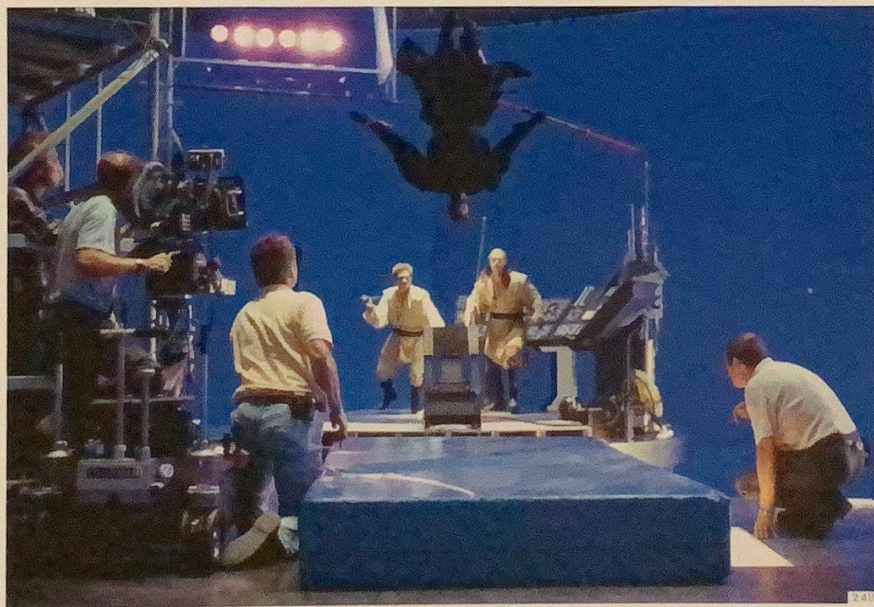
— FINAL VFX PRODUCTION STAGE —

Total # of shots completed—104
Total amount of data backed up—3.16 terabytes

Total minutes of final footage—11.4 minutes
How many hours have computers been powered on—315,360
Number of pixels processed—238,953,356,800
One stolen car (a practical joke. Though, it wasn't very funny to David.)
Number of back-up CDs burned—700

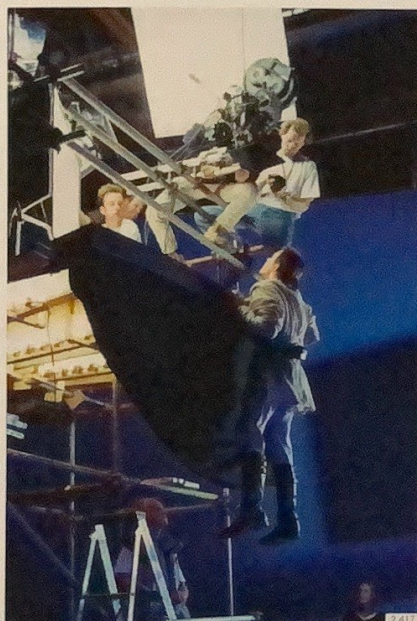
May 19, 1999

Rick McCallum When you're making a film and spend millions of dollars trying to get the best answer print and also create the best soundtrack, nothing is more depressing than going down to the local multiplex on the day the film opens and watch your release print in a theater where the projector is running at 50



“Ray [Park] is 5'10". There's not a lot of dialogue in that part and Rick [McCallum] thought it might be better for a stunt guy to play it. I got Ray in. He is trained in five or six martial arts and he is a really good gymnast. It was just a matter of teaching him the double-ended lightsaber, but he is now so good at it that he has left us way behind.”

Nick Gillard / Stunt Coordinator



percent of its luminance, the sound system sucks, there's no surround, there's no bass at all.

There are about 32,000 theaters in the United States, and less than one percent can accurately reproduce any film that any filmmaker makes. It's pretty mind-boggling. We're practically into the year 2000 and we can't even create an atmosphere for an audience where they can see the film the filmmakers made. It's impossible for someone to judge *The Phantom Menace* in 95 percent of the theaters it screens in. Viewers don't have access to some of the emotional tools we have to be able to express ourselves.

USA Today/April 23, 1999 Current digital sound systems in theaters use six channels: left front, center, right front, subwoofer, left surround, and right surround (usually on the side walls). As many as 2,000 theaters will have sound

systems with added force when *The Phantom Menace* lands May 19. Many are upgrading to Dolby Digital Surround EX, which improves on current Dolby Digital surround by adding sound from behind moviegoers.

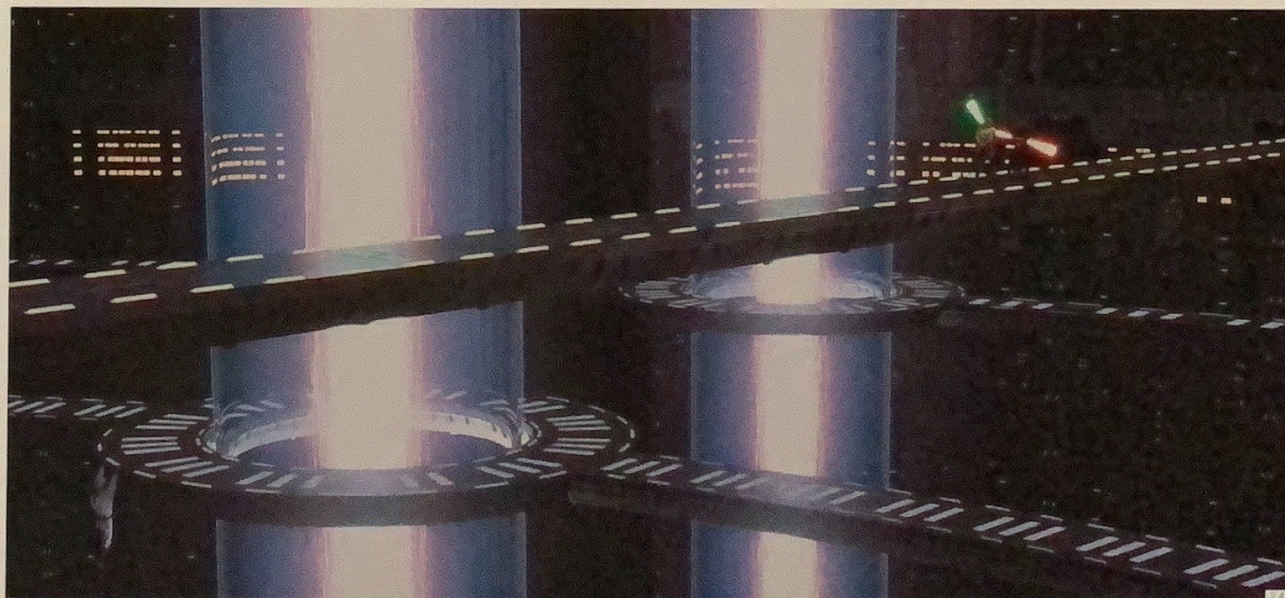
The Phantom Menace was released on May 19, 1999. It made over \$64 million on its opening weekend and over \$430 million that year in the US alone. It made over \$1 billion worldwide.

George Lucas Episode I became the highest grossing *Star Wars* movie of all time, but they were all successful. The people who loved I, II, and III the most were 10- and 12-year-olds. They loved Jar Jar. There was a completely different reaction from the critics, who loved *Star Wars* when they were 10 years old and wanted to feel the same way about the new films. Twenty years later they never understood that it was a movie for 12-year-olds.

The movies pretty much turned out the way I wanted them to. There are scenes that are in my personality, that other people might think, "Why did he do that?" Most of the stupid things are done because I liked them. For example, I thought Jar Jar getting his tongue grabbed by Qui-Gon was funny. The 30-year-olds thought it was stupid, but the 10-year-olds thought it was great.

Jar Jar became controversial. The media decided that Jar Jar Binks was black, and a racial stereotype, which meant they couldn't like him. The critic for *The Wall Street Journal* wrote that he was a "Rastafarian Stepin Fetchit." Somebody in the *Los Angeles Times* said it was racist. Another complained that he had a Caribbean accent. Well, it's not a Caribbean accent, it's a South Sea Island accent, where people speak in pidgin English. In a lot of cases you can't immediately understand what they're talking about because, like Cockney rhyming slang, they sub-

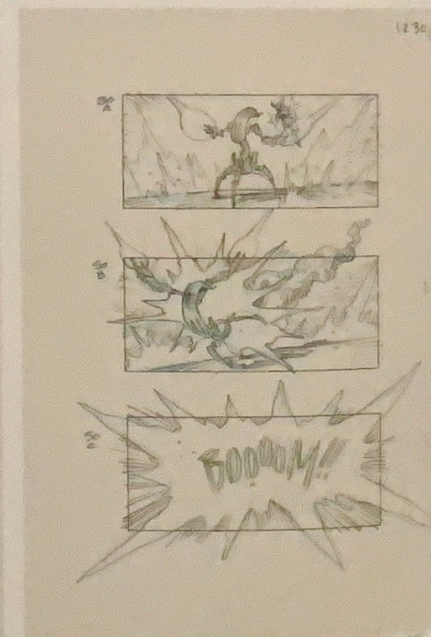
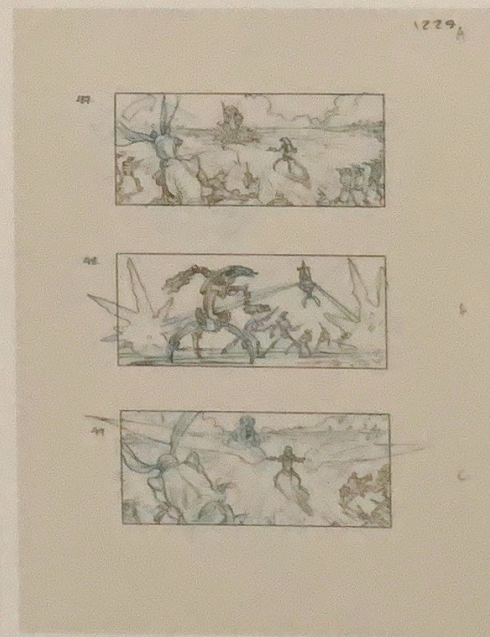
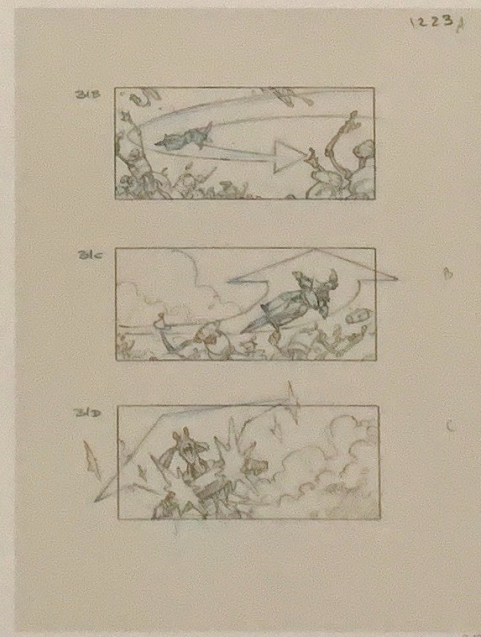
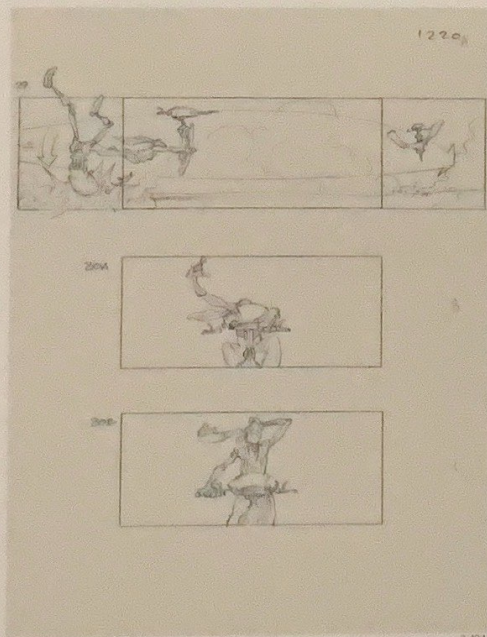
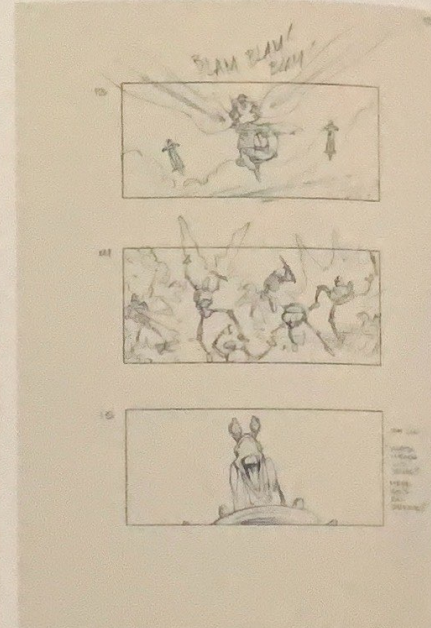
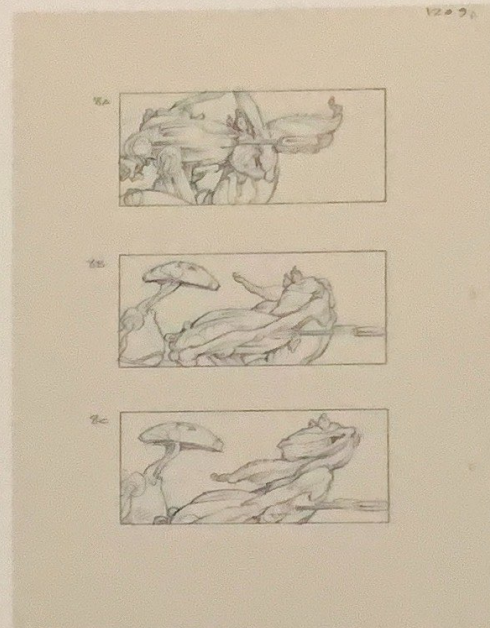
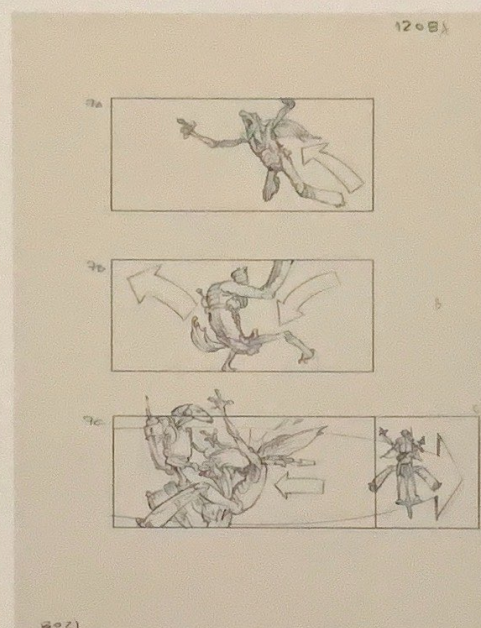
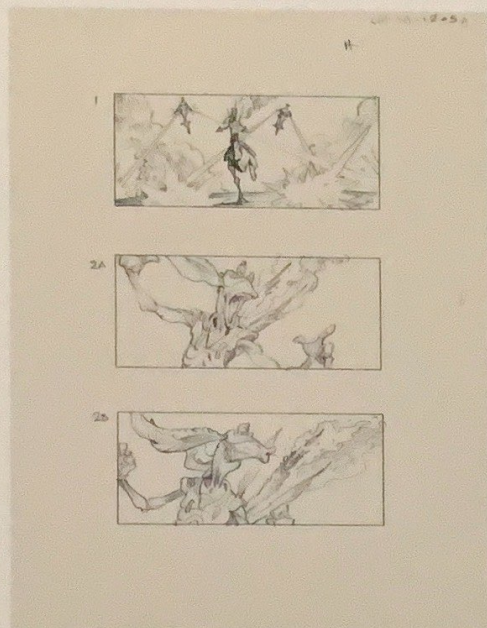
- 2.414 The Jedi and Sith Lord fight their way towards the Theed power generator.
- 2.415 The fight was filmed almost entirely against blue screen and the setting of the power generator room added in postproduction. Air rams were used to add spectacle and dynamism to the fight.
- 2.416 Each character has a different fighting style. Qui-Gon uses his height and controlled strength.
- 2.417 Darth Maul kicks Obi-Wan off one of the bridges. Obi-Wan falls but manages to hang on. Here McGregor is filmed as he clings to the minimal set.
- 2.418 Final frame of the power generator battle. Obi-Wan hangs on to the edge of the walkway (bottom left) while Qui-Gon continues to battle Darth Maul.





2.419 Terry F. Whitlatch artwork showing the Gungan cavalry mounted on their kaudu and other creatures charging into battle, supported by a division of air whales (April 5, 1996).





"Jar Jar tries to be brave but is insecure and clumsy. He's a blend of Charlie Chaplin and Danny Kaye."

Terry I. Whittatch



stilted words. But the viewers have to follow the movie, otherwise we've got to subtitle the whole thing, so I wrote a modified version of that in the script.

Paul Duncan Before you cast?

George Lucas Yeah. A lot of people tried out for the part, and I hired the best actor for the job, who just happened to be black. The inspiration for Jar Jar was Goofy. He looks like Goofy, and is goofy. Maybe Goofy was not as famous and well loved

as Mickey Mouse, but he still had followers and nobody condemned him.

June 18, 1999

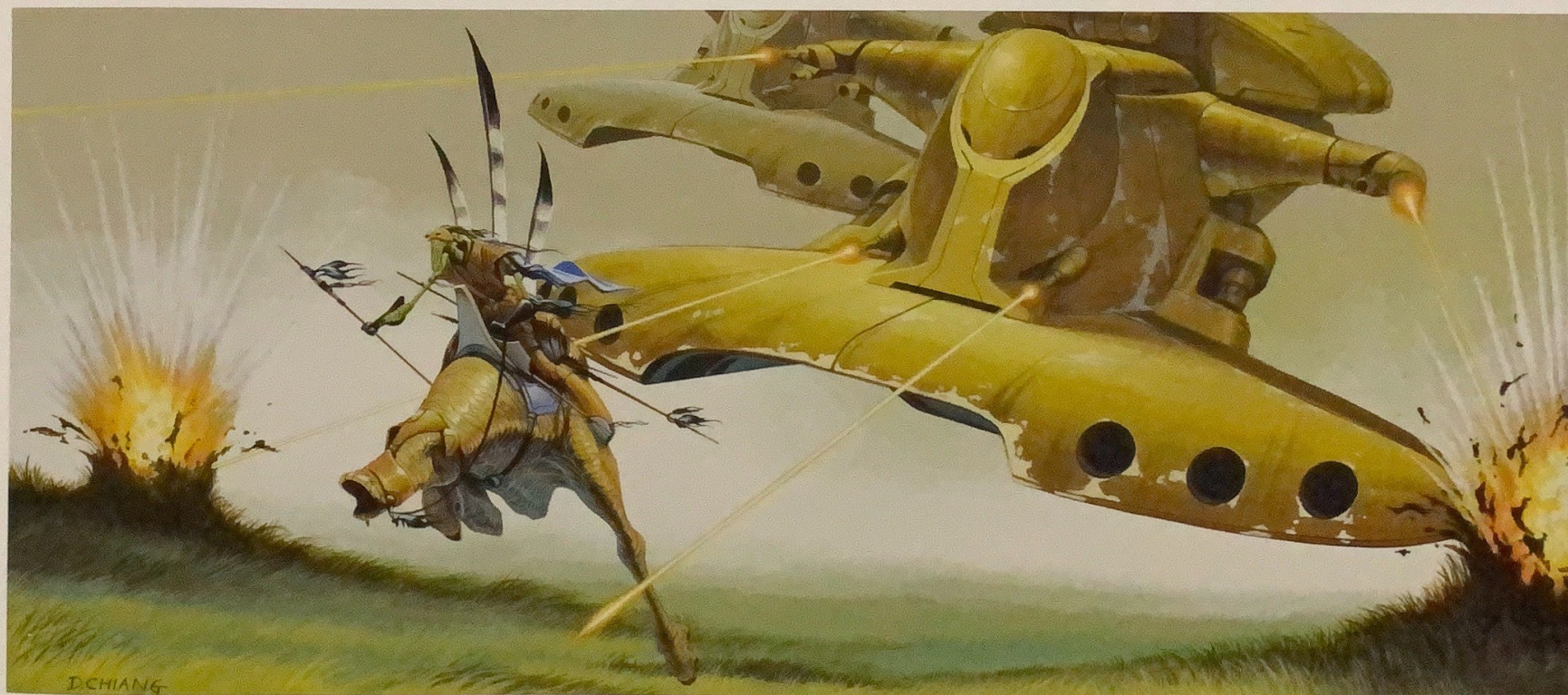
Dave Schnuelle / Engineering Consultant, THX On June 18, the first full-length feature film was projected in conventional

cinemas through digital projectors for a paying audience. The Lucasfilm THX group had been looking into the possibilities of using digital projection in the theater for some time. After a year of research, in March of this year, THX announced a set of specifications to define a cinema-quality digital projector. The *Star Wars* Episode I digital cinema release was planned as a technology demonstration of the newest digital cinema projector prototypes. Four theaters were chosen, two in Los Angeles and

2.420-427 **Iain McCaig's storyboard** for an unused battle scene follows Jar Jar as he is pursued by STAPs, leaps, ends up on one, and as the droid fires to rid itself of the Gungan the shots destroy many other droids. Eventually Jar Jar destroys a destroyer droid before being captured.

2.428 Jar Jar is blown off his kaudu and ends up hanging on a tank turret.

2.429 **Doug Chiang's dynamic painting** (April 25, 1996, 2.1 days) shows the AAT firing on the Gungan and forcing a retreat.

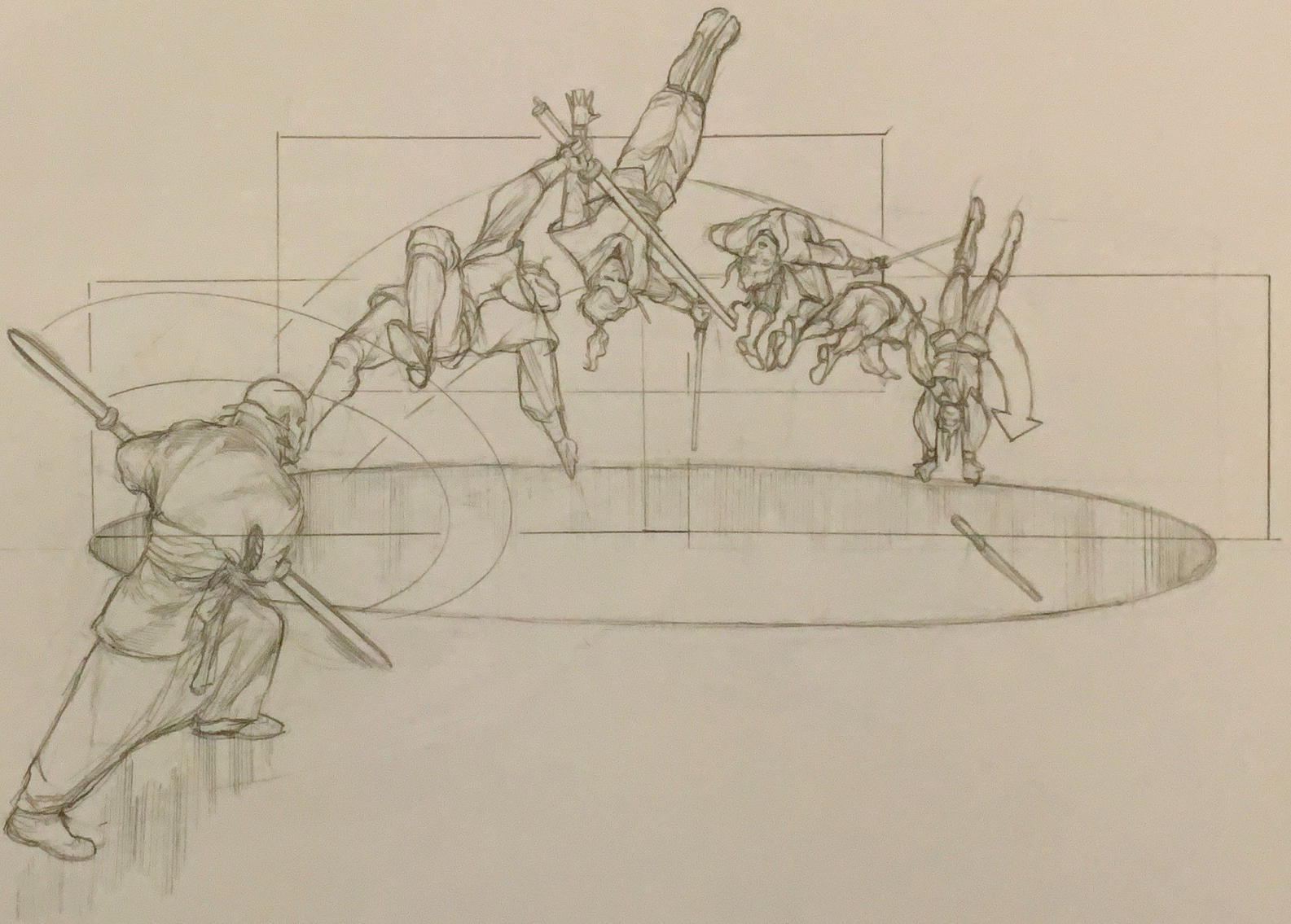


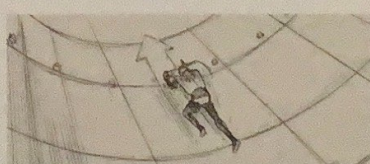
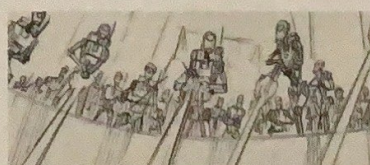
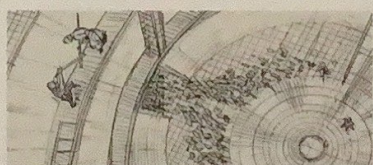
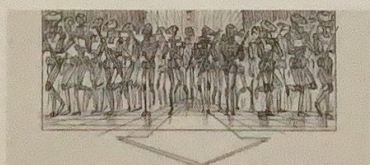
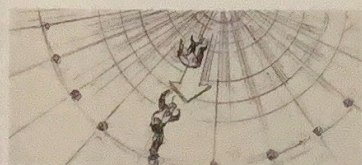
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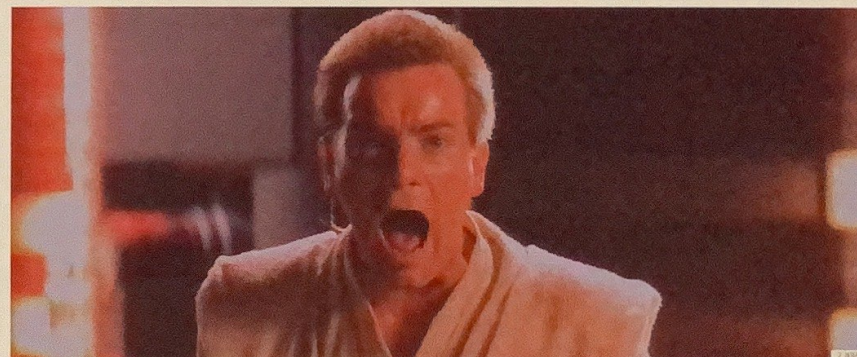
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53









2.430-431 Benton Jew's storyboards show alternative details and dynamics of the Darth Maul battle with Qui-Gon and Obi-Wan. Qui-Gon evades Darth Maul by leaping over the pit and landing on a thin ledge. Maul uses the Force to make the ledge crumble and, as Qui-Gon jumps, Maul uses the Force to throw the Jedi into the pit. Horrified, Obi-Wan takes on Maul and they battle, moving up to a higher level. Qui-Gon has survived by hanging on to a small outcropping, and when Droids enter Maul orders them to fire down Qui-Gon. Obi-Wan then leaps into the droids to save his master...

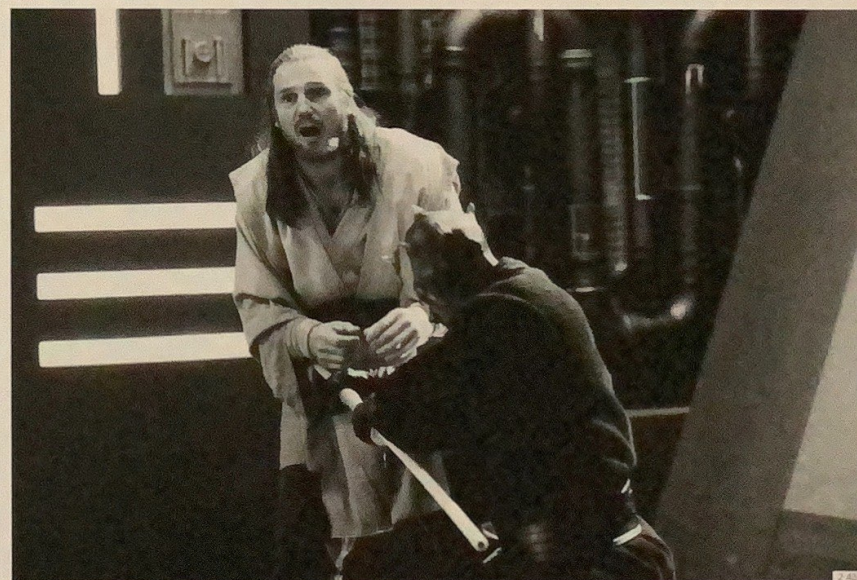
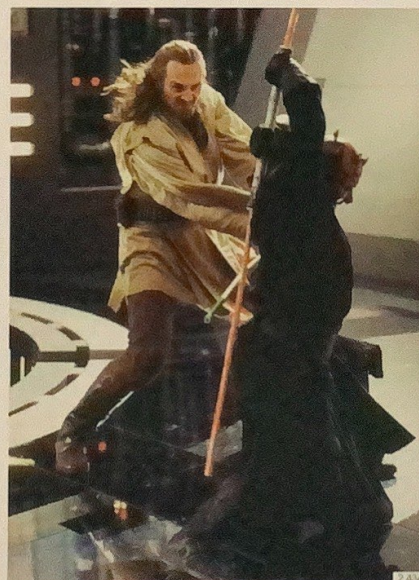
2.432, 2.436 Darth Maul impales Qui-Gon.

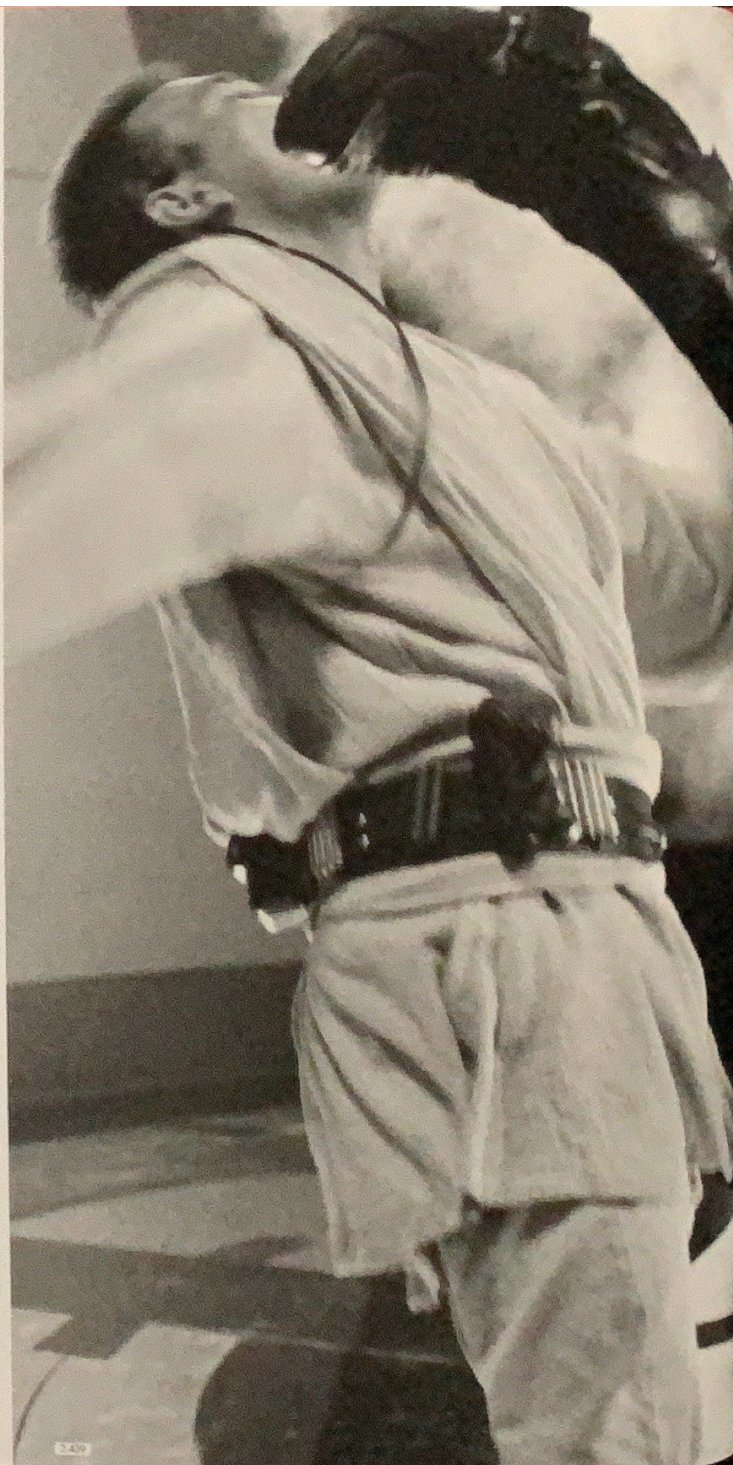
2.433 The energy field separates Obi-Wan (who is impatient), Qui-Gon (who kneels, waiting), and Darth Maul (who prowls back and forth like a caged animal ready to pounce).

2.434 Maul has a defense for every attack by Qui-Gon.

2.435 Obi-Wan screams in despair, trapped by the energy field, as his master is killed.

2.437-439 Obi-Wan must now take on Darth Maul and they battle fiercely. Nick Gillard: "You could show Ray something five minutes before filming, and he would still be better than you on the take."

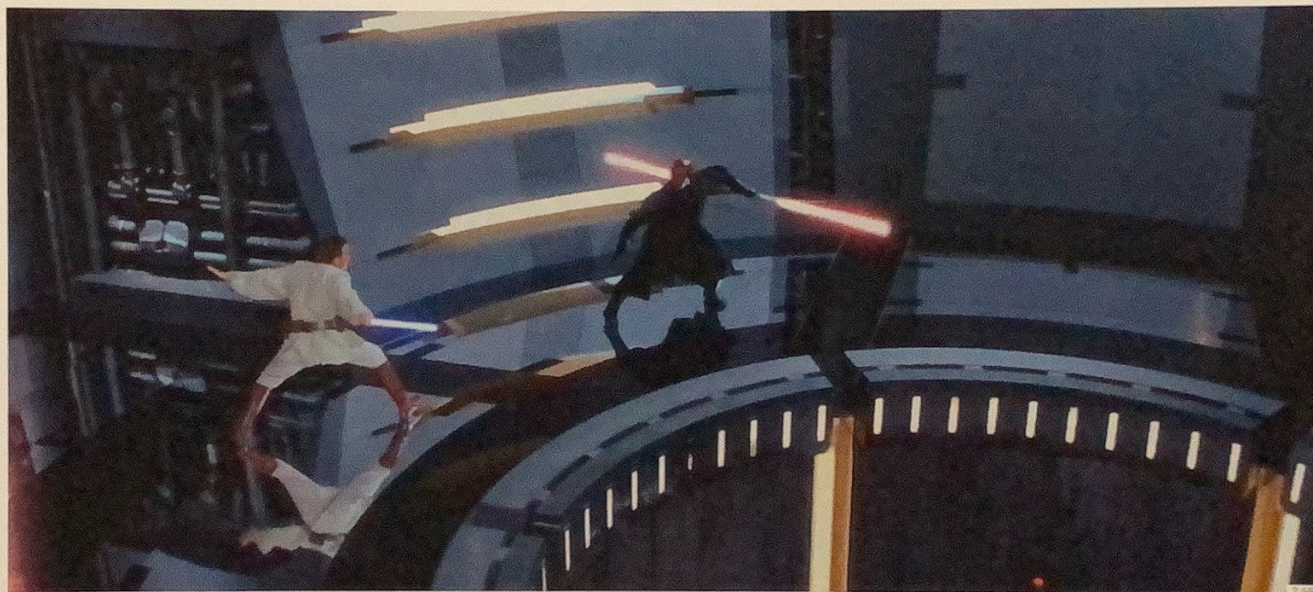






“George was always telling me Obi-Wan was very straight and Qui-Gon is always breaking the rules, but I get annoyed with my master for being wayward. However, when I’m fighting it seems that I do lots of twists and spins and twirls and showing off a bit.”

Ewan McGregor



- 2.440-441 The fight moves to the edge of the power generator melting pit.
- 2.442 A weary Obi-Wan slips into the melting pit. He barely manages to catch onto a nozzle in the wall. A minimal set was constructed for the wall of the pit, with the rest of the set added digitally in postproduction.
- 2.443 At the last moment Obi-Wan jumps out of the pit, uses the Force to guide Qui-Gon's lightsaber to his hand, and slices the Sith in two. Darth Maul falls into the melting pit to his presumed death.
- 2.444 On set, Ray Park falls onto a mattress to film Obi-Wan's face.
- 2.445 Ray Park also fell against blue screen to get Obi-Wan's point of view.
- 2.446 Obi-Wan cradles his dying master and promises he will train Anakin to become a Jedi Knight.



two in New Jersey near New York City. A theater in each city was equipped with a Texas Instruments prototype DLP cinema projector, and the other theater in each city was equipped with a Hughes-JVC light-valve projector.

Getting *Star Wars: Episode I The Phantom Menace* into four theaters for a full month of showings required unusual post-production techniques and innovative thinking on theater presentation. In the end, nearly 500 showings were provided to over 100,000 paying customers and were met with a very enthusiastic response, a historic event in digital cinema.

Traveling in Circles

George Lucas One of the basic concepts of human nature is personal responsibility. You either take responsibility for what you are doing, or you do not. But to deny that you have anything

to do with the world, that you don't influence it in any way is ridiculous. We all influence the world. We all teach. Some of us have larger voices than others, but everybody teaches every day of their lives. And everything you teach you are responsible for. I have a very loud voice and therefore I take it very seriously that whether you are influencing one person or a million people, the burden of responsibility still exists upon the individual.

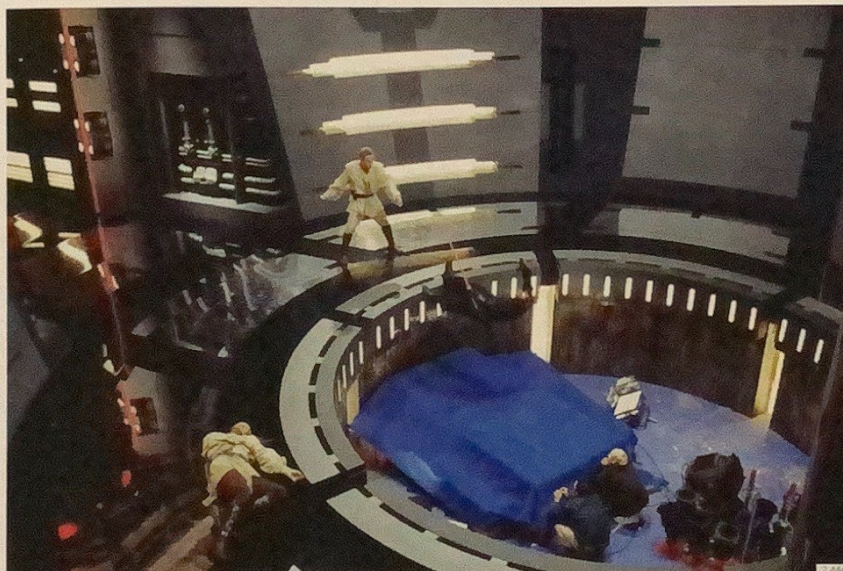
Paul Duncan Obi-Wan Kenobi tells Boss Nass, the Gungan leader: "You and the Naboo form a symbiotic circle. What happens to one of you will affect the other. You must understand this." Also, Qui-Gon later tells Anakin that we are symbionts with midi-chlorians, and that symbionts are "life-forms living together for mutual advantage." This idea of symbiotic relationships is key to the understanding of the film and of the *Star Wars* universe.

George Lucas Whenever you're telling mythological stories, you're traveling in circles. Like in a mandala there are small circles and bigger and bigger circles until finally you encompass the





7.443



7.444



7.445

universe. It's the same thing telling stories, in that every person, or relationship or group of symbiotic relationships, is always traveling in a circle. It goes back to either where it started or it intersects with other circles. At the end they survive because they're all connected.

In Episodes I, II, and III all the symbiotic relationships are torn apart. In Episode I, the Senators are more interested in themselves than they are in helping each other. They have fallen out of the symbiotic circle. They couldn't agree on anything because their interests became so divergent, so they couldn't get anything done as a Republic, and the chancellor uses this division, which he helped create, to become Emperor.

In Episodes IV, V, and VI the Rebels form their own symbiotic relationship from the Old Republic to fight the Empire. They're trying to restore balance.

If you get into the ecology of it then everything is connected. Everything. If something happens to one part, then it happens

to all parts, and that, ultimately, is one of the main movements in *Star Wars*.

Paul Duncan You introduced midi-chlorians in Episode I as indicators of the Force.

George Lucas This is the cosmology. The Force is the energy, the fuel, and without it everything would fall apart.

The Force is a metaphor for God, and God is essentially unknowable. But behind it is another metaphor, which fits so well into the movie that I couldn't resist it.

Midi-chlorians are the equivalent of mitochondria in living organisms and photosynthesis in plants—I simply combined them for easier consumption by the viewer. Mitochondria create the chemical energy that turns one cell into two cells.

I like to think that there is a unified reality to life and that it exists everywhere in the universe and that it controls things, but you can also control it.

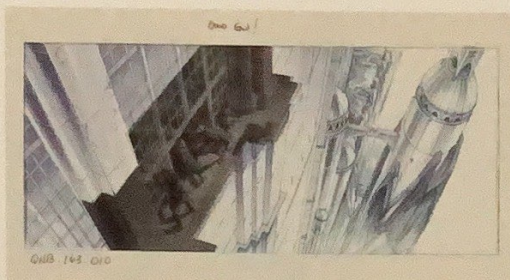
That's why I split it into the Personal Force and the Cosmic Force. The Personal Force is the energy field created by our cells interacting and doing things while we are alive. When we die, we lose our persona and our energy is assimilated into the Cosmic Force.

If we have enough midi-chlorians in our body, we can have a certain amount of control over our Personal Force and learn how to use it, like the Buddhist practice of being able to walk on hot coals. Some people can't because they just don't have as many midi-chlorians—that's just genetics. So the more midi-chlorians we have, the more accessibility we have to the Force. So we have to be trained how to use it.

For example, we can be good at math and on the piano, but to become a physicist or concert pianist, you have to be trained. You have to be trained to use the Force, to use the genes that give you a talent that is different from everybody else.



7.446



2.447

So you have to be found and fostered. If you have more than a certain number of midi-chlorians, you can become a Jedi. The Jedi will train you to connect to your Personal Force, and then to connect to the Cosmic Force. You don't have much power to control the Cosmic Force, but you can make use of it. The Jedi by nature of their genetics have more midi-chlorians than most people, but there is no direct connection between our human world and the microscopic world.

The Jedi are good, but they're not fantastic. They were never designed to be a superhero or anything like that. They were designed to be a Buddhist monk, who happened to be a very good warrior. And they became the peacekeepers of the human world.

As explained in *The Clone Wars* episode "Voices," Qui-Gon Jinn spent time with five Force Priestesses on their planet the Wellspring of Life. They explained to him how he could keep his persona when he died and joined the Cosmic Force.

Qui-Gon learned how to hear the Cosmic Force, and when he died in Episode I he joined the Cosmic Force with his persona intact and was able to talk to Yoda in Episode III. When he was there, he learned more about how to become a Force ghost to keep your identity. Qui-Gon passed that information along to Yoda. Yoda taught Ben, and Ben was teaching Luke how to do that.

So that's how that symbiotic circle of people learned how to go from heaven to Earth, so to speak. It's based on Greek mythology—how to become a God, but in a much more practical sense and without the ego, without the identity.

The Whills

George Lucas I was going to put more about the midi-chlorians and the Whills after Episode I, but everybody freaked out and said, "We don't like this. It's terrible," so I didn't. Also, I had an investment in the whole thing financially so I was forced to relent because I knew it was self-indulgent. But I was very keen to have it be in the movies, and if I had gone on to the last three, it would've all been explained there.

The Whills are a microscopic, single-celled life-form like amoeba, fungi, and bacteria. There's something like 100,000 times more Whills than there are midi-chlorians, and there's about 10,000 times more midi-chlorians than there are human cells.

The only microscopic entities that can go *into* the human cells are the midi-chlorians. They are born in the cells. The midi-chlorians provide the energy for human cells to split and create life. The Whills are single-celled animals that feed on the Force. The more of the Force there is, the better off they are. So they have a very intense symbiotic relationship with the midi-chlorians and the midi-chlorians effectively work for the Whills.

It is estimated that we have 100 trillion microbes in our body, and we are made up of about 90 percent bacteria and 10 percent human cells. So, who is in service to whom?

I know this is the kind of thing that the fans just go berserk over because they say, "We want it to be mysterious and magical," and, "You're just doing science." Well, this isn't science.



2.447

This is just as mythological as anything else in *Star Wars*. It sounds more scientific, but it's a fiction.

It's saying there is a big symbiotic relationship to create life, and to create the Force, but if you look at all life-forms in the universe, most of them are one-celled organisms. I think of one-celled organisms as an advanced form of life because they've been able to travel through the universe. They have their own spaceships—those meteorites that we get every once in a while. They've been living on those things for thousands of years; they've been frozen, unfrozen, and can survive almost anything.

The one-celled organisms have to have a balance. You have to have good ones and bad ones otherwise it would extinguish life. And if they go out of balance, the dark side takes over.

The Force is split into two: the positive/light side, and the negative/dark side.

The dark side is very greedy and possessive. Greedy people want everything, and when they get everything they're insecure,

2.447 Jay Shuster's concept art for the queen and her troops outside the palace window (April 2, 1995). Note that Shuster has added the comment "Good God!"

2.448 Final frame of the queen and her entourage scaling the outside of the building to reach the palace throne room.

2.449 They fire cables that embed themselves into a ledge some stories above, allowing them to ascend the exterior of the building. They were filmed being lowered and then the film was reversed.

2.450 Lucas helps Portman with her spare pistol shooting technique.

2.451 Sabé distracts Nute Gunray and his droids, giving Padmé time to access the pistols hidden in her throne.

2.452 Captain Panaka (Hugh Quarshie) holds Nute Gunray captive while Queen Amidala renegotiates the trade treaty.



2.448

“A lot of times after you finish a scene, you really have to work hard not to laugh because it is just so ridiculous with blue screen and people in funny white suits standing there. It’s like some big joke that George is playing on us.”

Natalie Portman



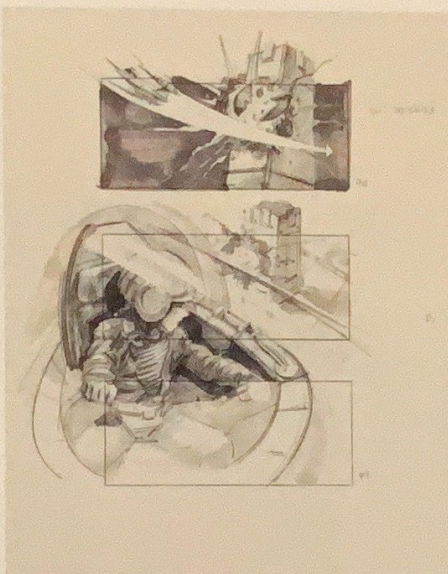
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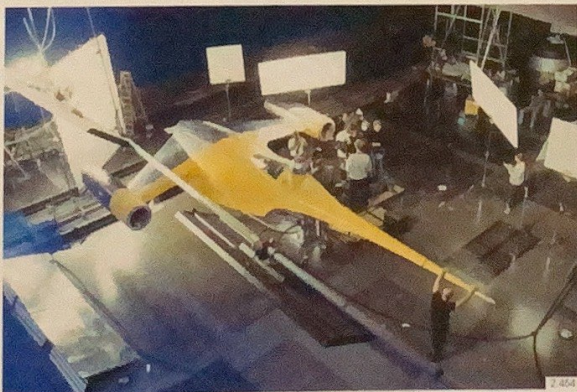


2.453

2.453 Ed Natividad storyboard of Anakin flying the Naboo starfighter and destroying a droid fighter.

2.454 Setting up a shot of Anakin flying the Naboo starfighter.

2.455 This Doug Chiang concept painting of the space battle shows an early design of the droid fighter (September 4, 1996, 3.5 days).



2.454

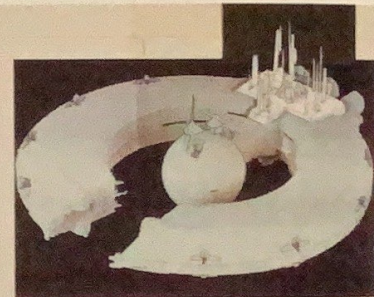
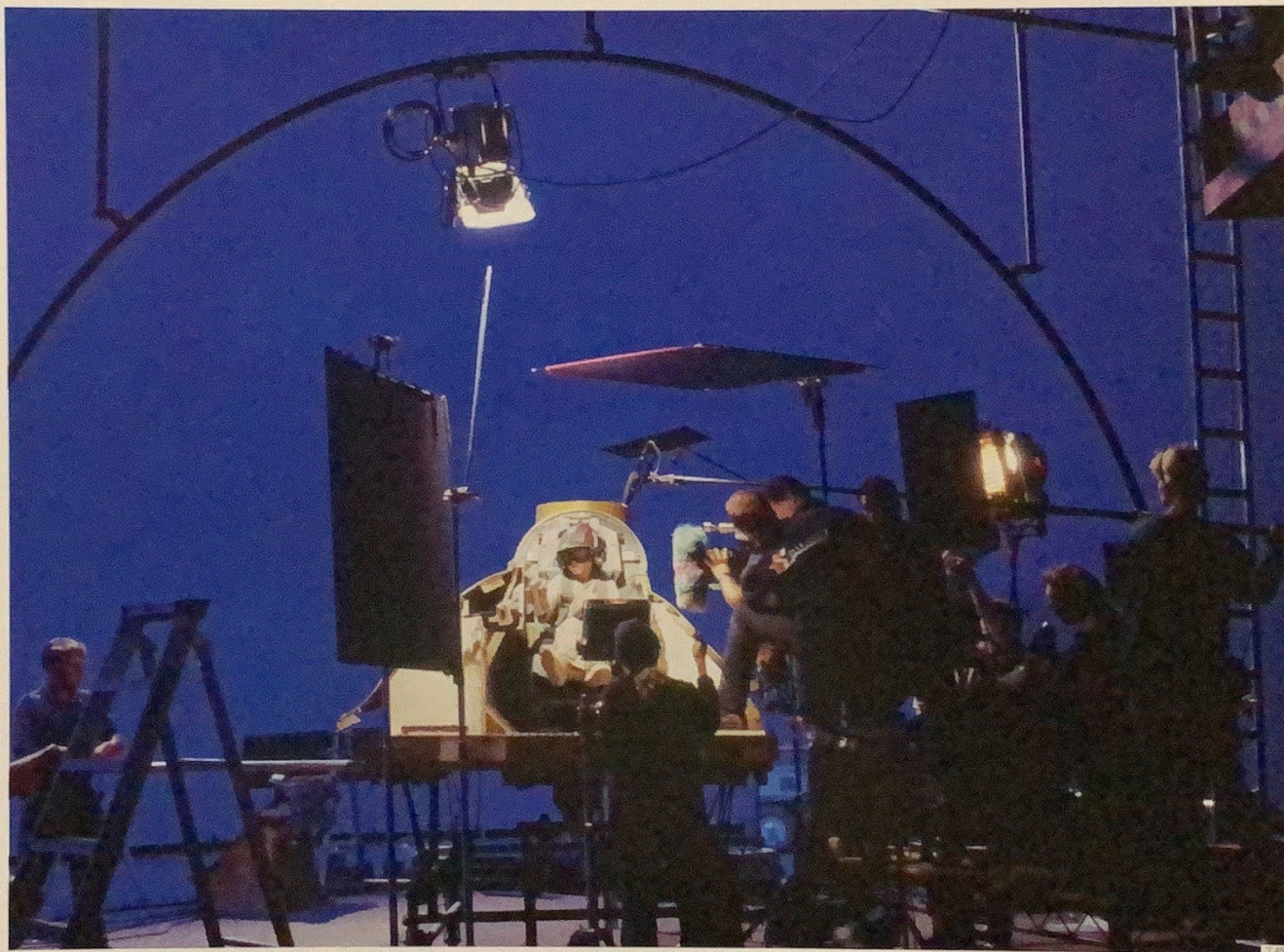


2.455



“The big Trade Federation Control Ship at the end of the picture is a motion control model. Most of the shots that it appears in have been executed in an animatic form, so George has worked through the composition and timing in a way that he’s pretty happy with. We’ve been getting those files from the Ranch so we can do an exact match on the motion control system.”

John Knoll



2.456 Jake Lloyd sits inside a gimbal, which simulates the movement of the starfighter.

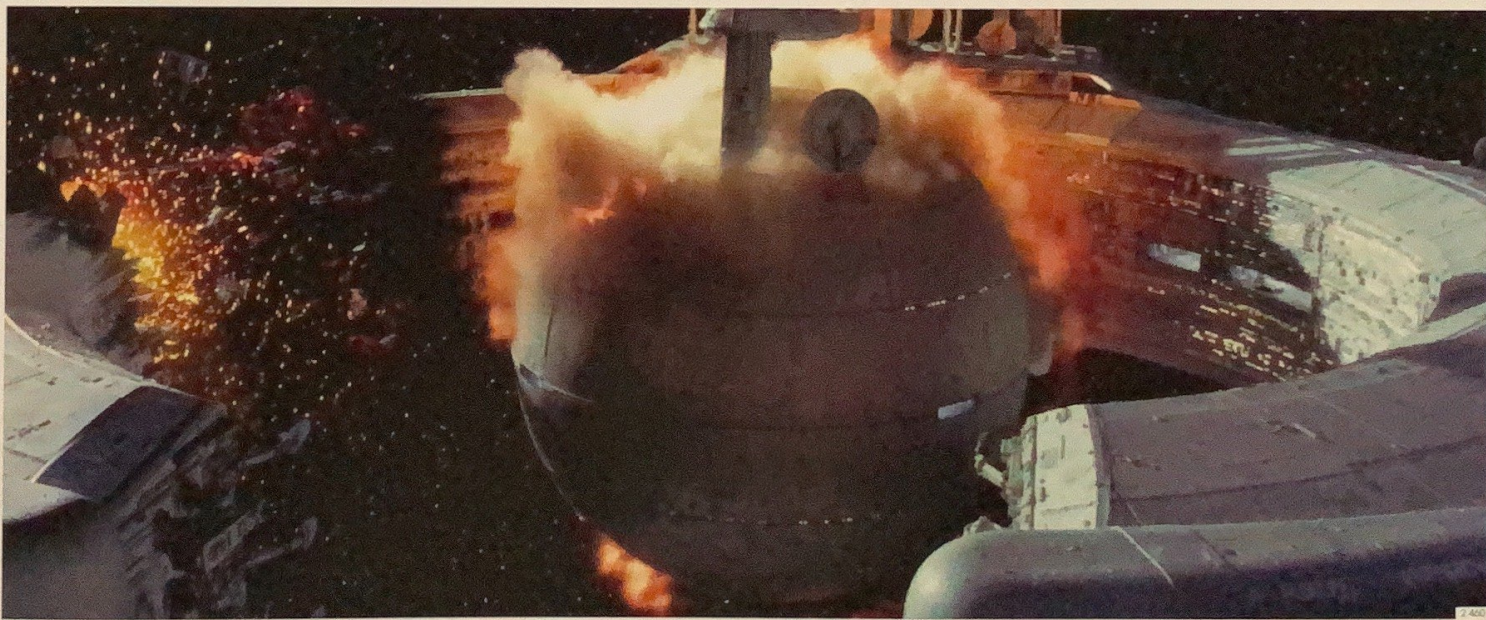
2.457 Photograph of the Trade Federation ship with drawings by Jay Shuster overlaid to transform it into the Trade Federation Control Ship (October 3, 1997).

2.458 Benton Jew's storyboard showing Anakin successfully piloting the starfighter. The bottom images show an earlier design of a droid ship before the decision was made to use culture droids.

2.459 A culture droid is firing above the Trade Federation Control Ship.

2.460 Anakin destroys the control ship, thus deactivating all the droids on Naboo and ending the war.



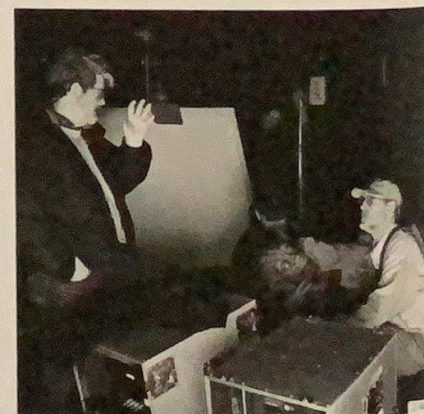


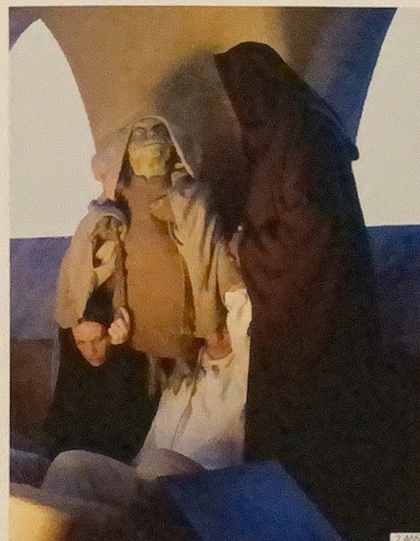
"Frank and his crew have done this fantastic job to create someone that is so very real that as soon as they say 'cut' and Yoda slumps over you almost want to reach over and say, 'Are you ok?' You would think you would get used to it, but I never got used to it. Every time he slumped I wanted to reach out and do something."

Samuel L. Jackson



SW 1		ADR Cue Sheet		Read 7-4-00
		Master		Cue Date: 07/02/00
Take	Time	Dialogue	Take	Time
Q871	07:01:47:13	QUI-GON BELIEVED IN HIM	07:00:01:01	QUI-GON BELIEVED IN HIM
Q871	07:01:48:25	<i>not shot</i>		
Q872	07:01:50:15	AND I BELIEVE IN QUI-GON	07:00:01:01	QUI-GON BELIEVED IN HIM
Q873	07:01:50:24	<i>not shot</i>		
YAT90	07:01:50:00	(INHALE/EXHALE)	07:00:01:01	QUI-GON BELIEVED IN HIM
YODA	07:01:53:27			
YAT97	07:01:54:14	THE CHOSEN ONE THE BOY MAY BE...	07:00:01:01	QUI-GON BELIEVED IN HIM
YODA	07:01:55:23			
YAT98	07:01:57:04	...NEVER THE LESS...	07:00:01:01	QUI-GON BELIEVED IN HIM
YODA	07:01:58:14			
YAT99	07:01:59:00	...GRAVE DANGER I FEAR IN HIS TRAINING	07:00:01:01	QUI-GON BELIEVED IN HIM
YODA	07:02:01:39			
Q873	07:02:02:14	MASTER YODA...	07:00:01:01	QUI-GON BELIEVED IN HIM
Q874	07:02:02:14	<i>not shot</i>		
Q875	07:02:04:00	...I GAVE QUI-GON MY WORD	07:00:01:01	QUI-GON BELIEVED IN HIM
Q876	07:02:05:01	<i>not shot</i>		
Q877	07:02:06:08	I WILL TRAIN ANAKIN	07:00:01:01	QUI-GON BELIEVED IN HIM
Q878	07:02:07:20	<i>not shot</i>		
YAT10	07:02:07:00	HUH (EXHALE) HUH	07:00:01:01	QUI-GON BELIEVED IN HIM
YODA	07:02:11:00			
YAT11	07:02:10:00	(BREATH)	07:00:01:01	QUI-GON BELIEVED IN HIM
YODA	07:02:10:00			
Q879	07:02:10:10	WITHOUT THE APPROVAL OF THE COUNCIL IF I MUST	07:00:01:01	QUI-GON BELIEVED IN HIM
Q880	07:02:10:20	<i>not shot</i>		
YAT12	07:02:12:11	(BREATH)	07:00:01:01	QUI-GON BELIEVED IN HIM
YODA	07:02:13:34			
YAT13	07:02:13:00	QUI-GON'S DEFIANCE I SENSE IN YOU (BREATH)...	07:00:01:01	QUI-GON BELIEVED IN HIM
YODA	07:02:15:00			
YAT14	07:02:15:00	...NEED THAT YOU DO NOT.	07:00:01:01	QUI-GON BELIEVED IN HIM
YODA	07:02:16:23			





2.461 Neither Yoda nor the Council agree to Obi-Wan taking Anakin as his Padawan. Obi-Wan insists that he will honor the wishes of Qui-Gon and Yoda relents. This scene was shot on March 5, 1995.

2.462 ADR Cue Sheet for the dialogue between Yoda and Obi-Wan, including the cues for Yoda's breathing.

2.463 Lucas and Frank Oz, who performs Yoda with a puppet, discuss the scene.

2.464 Establishing shot of the Theed Temple for Qui-Gon's funeral.

2.465 Oz and his team operate the Yoda puppet. Yoda and Mace Windu voice their concerns about the presence of the Sith. Initially, the scene was filmed with Yoda wearing a hood, as shown here, but it was later reshot without the hood.

2.466 Qui-Gon's funeral pyre and the mourners honoring his memory. Among the mourners are Anakin, Padmé, and Chancellor Palpatine.

constantly afraid that somebody's going to take it away from them. Fear is the doorway to the dark side. If you're fearful, you're going to do bad things, and you end up in World War II with 85 million people being killed. If you keep that up, there won't be anybody left.

If you're not afraid and you're willing to jump into the river to save a baby, regardless of the consequences, that's compassion. That's the good side of the Force.

A Global Entity

George Lucas In the beginning, the rules would be given by tribal leaders and other human entities—"You can't do that. You're disrupting everybody. So I'm sending you out into the woods."—but then it became supernatural. "If you go against the Ten Commandments, which came from God, bad, bad things are going to happen to you." It's a mechanism to control society, to keep it civil. Ultimately, fear doesn't work. Look at the history of

humankind. Humans have killed billions of people and it hasn't solved anything. We're still doing it. And compassion has been overwhelmed by fear and anger and hate.

In the past people living in Jerusalem did not have any real contact with people in Rome; the chances of them meeting was zero, so they could have their own individual set of values. But now we're going through this transition into a global entity. That means everybody on the globe has to pretty much have the same values, and it's going to be a rough road to achieve this. We now know that what we do here in America is going to affect what goes on in Ireland and around the world.

We'll get there because we won't survive if we don't. But as we evolve into this, we're getting a lot of greedy people and isolationists and nativists and xenophobes who say, "I don't want to be with those people." That stuff has to fall away.

Paul Duncan It's a fear of the other or blame of the other without taking responsibility for your own faults.

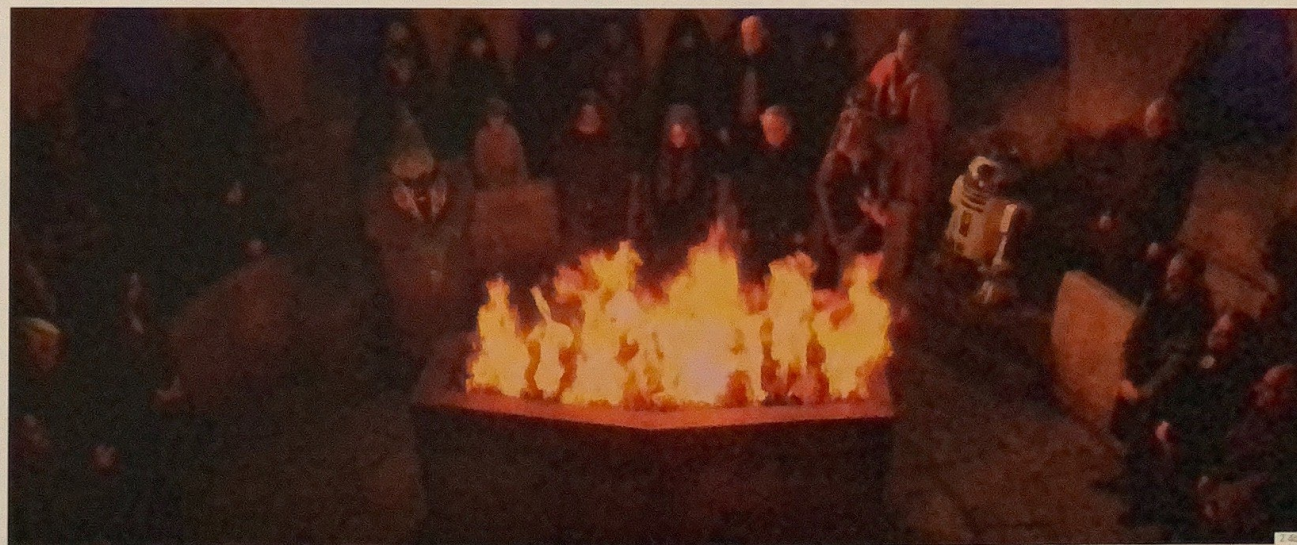
George Lucas To me it's a denial of symbiotic relationships, of understanding that you need each other as part of the

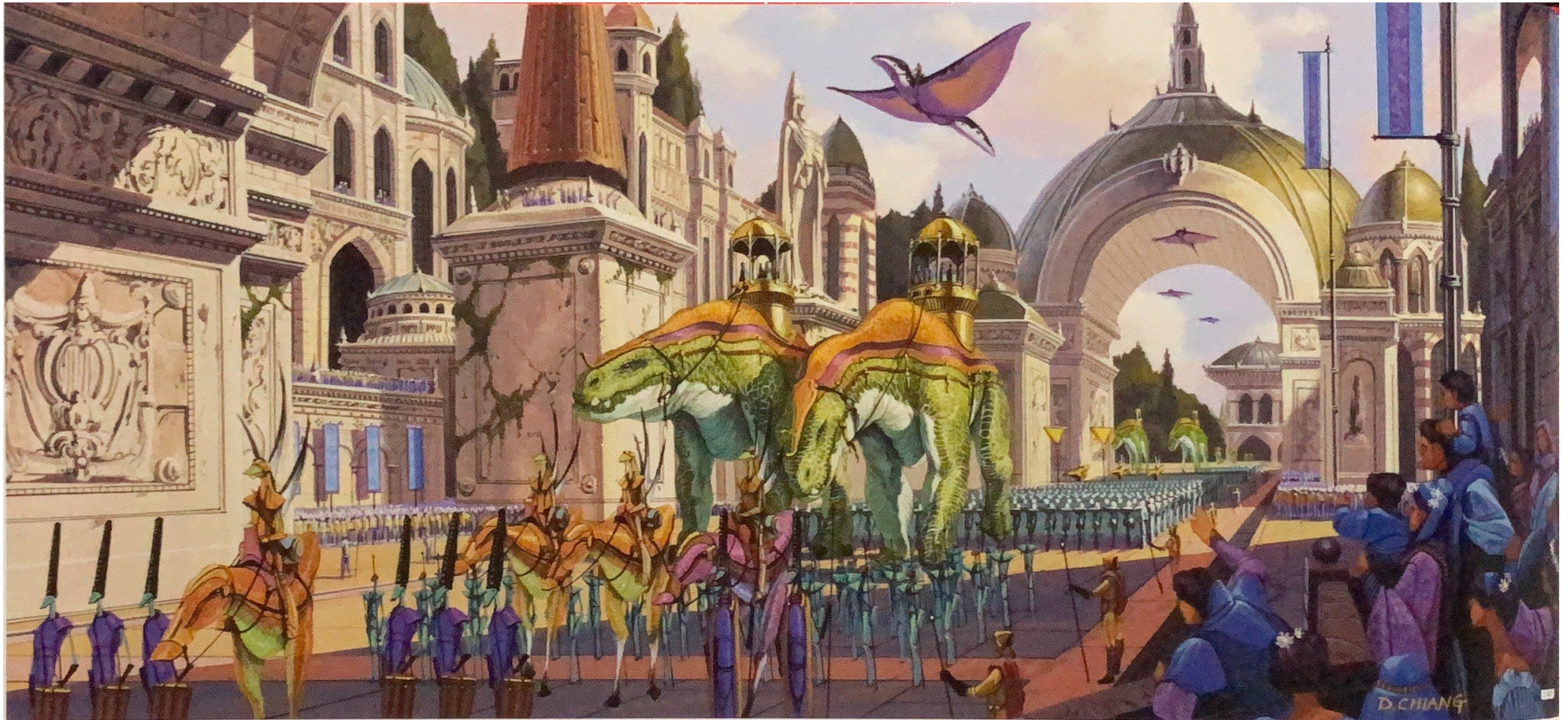
ecosystem. People think they are special, but they're not. Who said humans are special? Anybody who's lived with an animal knows that animals talk, have emotions, and feel sorrow. They are not as evolved as humans are, but they're no different than we are. Thinking that we're the important ones and the only things that matter is solipsistic nonsense.

When you start pulling people and things and processes and everything out of the ecosystem, the whole system is weakened until it falls. Then we'll all die.

Everybody says, "Oh, global warming. We're going to destroy the planet." Well, we don't have the power to destroy the planet. We can't even come close. What we're talking about is destroying humankind. The worst that's going to happen is Earth is going to look like the Sahara Desert. There's not going to be any living things on it except for microbes under the sand or under the ice.

There are two ways that humans are going to survive: migrate, or adapt. Or both. Why are we going to Mars? Migrating in the solar system is a lot harder than migrating on the planet, but we





"This film is an enemy of the status quo. This film is pro-change and about the acceptance of change."

George Lucas

have to learn how to do it. We have to adapt to Mars. Maybe we can terraform and make the trees grow, or maybe not. But in the end, you have to gain the knowledge because knowledge is the only thing we have to survive.

Paul Duncan The Gungans and Naboo have to make this decision about how to survive and save their planet.

George Lucas The Gungans are more sophisticated; therefore they don't want to have anything to do with Naboo, who they don't like. They rule the underworld, while the Naboo rule the upper world. The Gungans are an organic society so all of their technology is organic, while the Naboo are mechanical. They coexist but do not cooperate, so they ignore each other.

Paul Duncan The only way to save the planet is by them joining together and cooperating, of completing the symbiotic circle, as Obi-Wan suggests.

George Lucas The *Star Wars* universe is based on these integrated concepts, which are repeated over and over again within the story. Some people think these cosmic rules don't exist, but like gravity or time, they affect our daily lives.



2.467 Doug Chiang's concept painting for the victory celebration in Theed (October 10, 1996, 5.3 days).

2.468-469 The triumphant Gungans march through Theed in a victory parade. All the cultures of Naboo are reconciled and Boss Nass signals this by holding up the Globe of Peace.

2.470 Plan indicating the positioning of the crowds in this shot. David Menz/Sequence Supervisor: "The crowd extras were shot in blocks of 30, and we had more than 100 squares of 30 people. Then we used Softimage 3D to lay down a grid on the plaza floor to determine where the 2-D crowds should go. It made things much more manageable."



2.471 A dynamic Darth Maul publicity photo.

2.472 Editorial Change Notes, dated April 1, 1999, showing details of amendments to specific shots six weeks before the film's release date. Dennis Muren, John Knoll, and Scott Squires led the respective teams at ILM and all of them still had a number of changes to be made to their sequences. Some of the changes were minor but, even at this late stage, new shots were being added.

2.473 McGregor, Lloyd, and Newson pose for a publicity shot.

2.474 Teaser poster released November 10, 1995, designed by Ellen Lee. The title simply states, "Episode I," but the long shadow of Darth Vader hangs over the film.

SW 1		Editorial INET / Change Notes 4/1/99	
Visual Effect ID	TS	INET / Change Notes	Ref
Dennis Muren			
GGB.358.021		Wide shot of Jar Jar with the attached Orinid shooting 2 Orinids and Chastoyer	
Dennis Muren		4/1/99 Confirmed with MSL and Rola C. that frames 1:184 are okay	6
Original Counts		3:00:00 GML Review - pan a little more to the right for the second shot and add a small pan	23.0
John Knoll			
AMR.076.019 - 1		Anakin's Hotel Main Room - CDS Out-Over & Anakin	3
John Knoll		4/1/99 UNFINISHED	
Unfinished		3:04:00 Saw 1:16 as head	022
		Anakin patched in	
AMR.076.058 - 2		MCU Padme	3
John Knoll		4/1/99 UNFINISHED	
Unfinished		1/13/99 RLM is going to starboard Padme	081
		1/11/99 Screen like shot at RLM in the AM. Chastoyer issue on Padme	
ABR.106.000W - 1		Revised shot - Anakin's Bedroom - MCU C2PO - Wipes to - SCDS 108 0:10 Slave Gutters Shot	4
John Knoll		4/1/99 Saw a report this morning of RLM that with a new large set, RLM is to replace the negative and reprint.	290
Reg. Check!		3:05:00 Padme frame in the left handle - NOT used in Marlene cut	
WPE.054.106.020		Anakin's fighter enters frame and away in the balcony	6
SPB.158.023		4/1/99 CHATTED this shot to the GML review.	
John Knoll		1:02:00 New VFX name, was QNB by mistake - corrected as SPB.158.023	
Scuttled		1:02:00 Anakin's fighter to come by camera bigger, slower and be as small as possible by the end.	
Scott Squires			
QNB.157.052		Queen's Battle - Anakin's POV from at first wheel drop	6
Scott Squires		4/1/99 Have the dashboard switch from blue read out to red auto pilot on frame 11	148
Original Counts		3:00:00 Dashboard read out should switch over to red auto pilot read out	
		3:00:00 GML Review - the left barrel (drivers side) hit the 1st Destroyer at about frame 10, the	
QNB.157.072A		Queen's Battle - Queen's POV Three wheel drops thing	6
Scott Squires		4/1/99 New shot added - close past from 1:07:00 - wrong action, should have 3 drops thing or	1.0
New Shot		soon with smoothly up.	
QNB.157.073		Wide Shot Wheel Drops thing at camera	6
Scott Squires		4/1/99 This shot moved towards the tail by one shot	140
New Shot		3:05:00 lengthened the shot at the tail	
		1:18:00 New Shot - second out of the wheel drops thing we wanted up	
THP.179.028		Jar Jar & Ciel off Geonosis	7
Scott Squires		4/1/99 Add content to the BG right side	
Original Counts		1:01:10 Cut in a postcard that lengthened the shot 7:16	044
		1:02:00 The dancing group should be breaking falling back into formation in the shot before	

"One of the principal themes is symbiotic relationships, which means how different life-forms/entities/people live together for mutual advantage."

George Lucas





Attack of the Clones

Episode II: Attack of the Clones (2002)

Synopsis

Ten years after *The Phantom Menace*, the galaxy is on the brink of civil war. Under the leadership of a renegade Jedi named Count Dooku, thousands of planets threaten to secede from the Galactic Republic. When an assassination attempt is made on Senator Padmé Amidala, the former Queen of Naboo, Jedi apprentice Anakin Skywalker is assigned to protect her. In the course of his mission, Anakin discovers his love for Padmé (as well as his own darker side). Soon, Anakin, Padmé, and Obi-Wan Kenobi are drawn into the heart of the Separatist movement and the beginning of the Clone Wars.

RELEASE DATE May 16, 2002 (US)

RUNNING TIME 142 minutes

Cast

OBI-WAN KENOBI EWAN MCGREGOR
SENATOR AMIDALA / PADMÉ NATALIE PORTMAN
ANAKIN SKYWALKER HAYDEN CHRISTENSEN
COUNT DOOKU CHRISTOPHER LEE
MADE WINDU SAMUEL L. JACKSON
YODA (VOICE) FRANK OZ
SUPREME CHANCELLOR PALPATINE (AN MCDIARMID)
SHMI SKYWALKER PERINILLA AUGUST
JAR JAR BINKS / ACHK MED-BEG AHMED BERT
SIO BIBBLE OLIVER FORD DAVIES
JANGO FETT TEMUERA MORRISON
C-3PO / DANNI FAYTONNI ANTHONY DANIELS
R2-D2 KENNY BAKER
KI-ADI-MUNDI / VICEROY NUTE GUNRAY BLAS CARSON
SENATOR BAIL ORGANA JIMMY SMITS

GLEGG LARS JACK THOMPSON
ZAM WESELL LEEANNA WILSMAN

Crew

DIRECTOR GEORGE LUCAS
PRODUCER RICK MCCALLUM
SCREENPLAY GEORGE LUCAS, JONATHAN HALES
STORY GEORGE LUCAS
EXECUTIVE PRODUCER GEORGE LUCAS
PRODUCTION DESIGNER DAVIN BOCCOVI
DIRECTOR OF PHOTOGRAPHY DAVID TAYNOR
EDITOR AND SOUND DESIGNER BEN BURT
COSTUME DESIGNER TRINA BODAN
CONCEPT DESIGN SUPERVISORS BOB CHANG
DIX TENESE, RYAN CHURCH

VISUAL EFFECTS SUPERVISORS JOHN KNOLL,
PABLO HELMAN, BEN SNOW, DENNIS MURIN
ANIMATION DIRECTOR ROB COLEMAN
HIGH DEFINITION SUPERVISOR FRED MEYERS
MUSIC JOHN WILLIAMS



Life Is a Pendulum

By Paul Duncan and Colin Odell & Michelle Le Blanc



George Lucas I'm a strong proponent, for better or worse, of making a film that works. By that I mean the audience can follow the story, be entertained by the story, be moved by the story, or educated by the story. I'm not that interested, ultimately, in having it technically perfect. I've discovered that has nothing to do with telling a story.

So when people analyze digital as opposed to the photochemical process, they're talking about things that nobody, except for a highly trained cameraman, lab technician, or special effects person could ever see. They're focusing on things that aren't issues that the public would ever know about or care about. To not use a process simply because of some very esoteric technical issue is not something that I can relate to very well.

There is a lot of controversy about the fact that we're shooting Episode II digitally. People ask why am I doing this? The real question is, "Why not?" It's vastly superior in every way. It's cheaper. You'd have to be nuts not to shoot this way. As far as I'm concerned, we should have been shooting digital cinema 20 years ago.

3.1 Final frame showing Yoda preparing for battle with Count Dooku. Samuel L. Jackson: "Mace is the second-baddest man in the universe. Yoda is the baddest."

3.2 Poster for Episode II: Attack of the Clones designed by Dave Strazan, released in theaters and online on March 12, 2002.

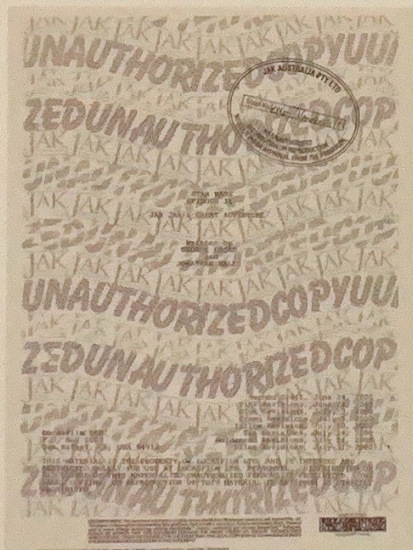
3.3 Final frame of Senator Amidala's Naboo cruiser approaching Coruscant.

3.4 Script for Episode II: Jar Jar's Great Adventure, co-written by George Lucas and Jonathan Hales. The "Lilac Revisions," dated July 31, 2000, refers to the paper color of the revised script pages. The watermarks on the script are a security measure that renders photocopies of the page unreadable.

3.5 Final frame of the Naboo cruiser, accompanied by a starfighter, flying over the clouds of Coruscant.

3.6 Ryan Church's concept art shows the senator's ship landing on the Coruscant platform (June 7, 2001).

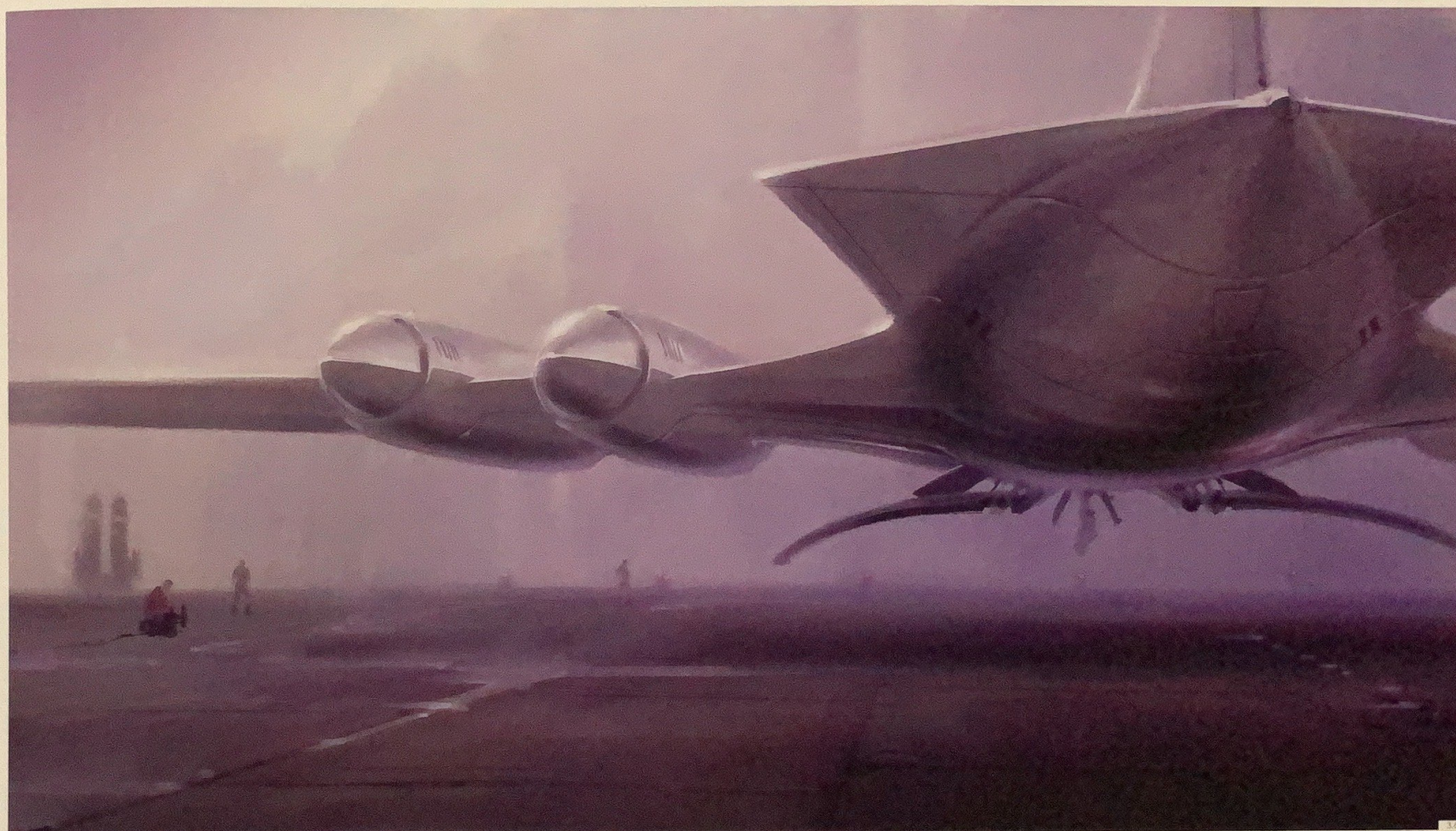
3.7 Doug Chiang's concept artwork for the Naboo cruiser builds upon the design forms created in Episode I (October 15, 1999).



3.4



3.7



3.6

Rick McCallum / Producer The very first time that George ever discussed with me his concept of a digital future for cinema and television was in 1989. I'm amazed now how precise that vision was about what he wanted to achieve. The idea was to make a digital pipeline, not just to have a camera to shoot digital, but to do visual effects, to do post-production—the editing, the sound, the music—and then most importantly to make sure that an audience actually got to see the film projected digitally. That was the dream.

George Lucas Digital cinema didn't just happen, and it didn't happen because a lot of independent little people invented stuff. It happened because we convinced a lot of

people from big companies to put up big money to advance the technology to make it happen.

Rick McCallum What was extraordinary about the whole experience is that we had about 62 companies come together based on George's dream. Investing serious money without a single contract, without a single lawyer.

George Lucas Over \$100 million. Sony put in about \$30 million to build the camera. Panavision put in about \$20 million to build the lenses. And you just go down the line.

Rick McCallum It took years to make this happen. All on people giving their word.

George Lucas And, of course, the Hollywood studios fought us the whole way.

George Is Not Kidding

Rick McCallum We produced the *Young Indiana Jones Chronicles* TV series nonlinearly by thinking of the 28 episodes as one giant film. If I was shooting in Paris and George was editing in San Francisco and we needed a pickup shot, George would send me mock-up footage and, although we'd each be working on



3.7

"One of the lures going back and finishing the prequels was that I would get to do the Clone War."

George Lucas



a different episode, we could get it shot because of the way we structured our deals with our cast and crew.

In 1991, digital technology evolved to a level where we were able to do 100 VFX shots for every episode. We were shooting mostly on 16 mm, and sometimes on Super 8, but never on 35 mm. We knew that the whole mythology about film formats is all BS. You can be deeply untalented and be shooting on 70 mm, and it's still going to look bad. You can be deeply talented and shoot on Super 8 mm, and it's going to look fantastic. It's not a format issue: it's a talent issue.

We had to spend an enormous amount of time transferring the film onto videotape, and then onto laser discs, to edit on the nonlinear EditDroid system. Once it was edited, the tapes would be color corrected using DaVinci, the effects

composited on Quantel's Harry, and the completed tapes sent to broadcast.

We then used the same techniques on a 35 mm feature film, *Radioland Murders* (1994), which was edited on an Avid, a nonlinear editor. No one had a problem with the digital effects on that film—they're imperceptible. Even though the film wasn't successful, that part of the process was incredibly successful for us. So, we started to make films in a very different way, and once you start doing that you say to yourself, "If I could only capture this stuff electronically!"

We got into partnerships with people that we thought could help us move into digital acquisition and production.

Larry Thorpe / Vice President, Acquisition Systems for Sony Electronics In late 1995, Rick purchased a widescreen Digital

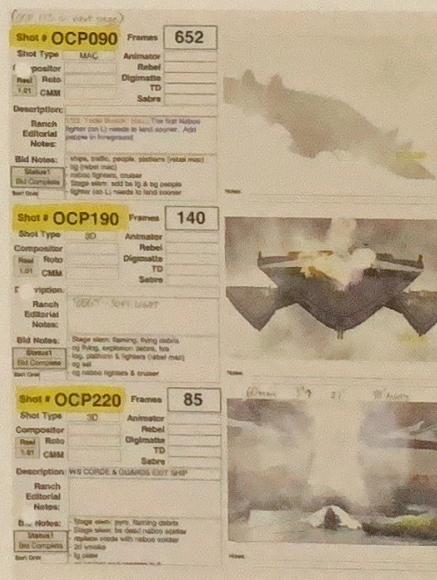
Betacam from us—to support the shooting of behind-the-scenes material during their movie and television productions.

Rick McCallum It was so mind-breaking that there were sequences we could shoot in the field with a camera that weighed 20 pounds. All the while, we're trying to create software to give that footage more of a film look, so it could be integrated with the 16 mm and 8 mm footage that we were shooting for TV.

Mike Blanchard / Technical Supervisor We did a number of DigiBeta (Digital Betacam) camera tests to figure out, "Okay, what would that look like if you filmed it out (printed digital onto film) and watched it on a big screen? What are the things we need to fix?" For example, during the shooting of the Jedi Rocks scene for the *Return of the Jedi* Special Edition.

Paul Duncan That's last week of June 1996?

Mike Blanchard Right. We shot DigiBeta side by side with the film camera. DigiBeta is standard definition (720 x 486 pixels) running at 30 frames per second (fps). When we converted it to 24 fps and transferred it to film—which is the speed film projectors run—



- 3.8 *Captain Typho (Jay Laga'aia) insists that Senator Amidala (Natalie Portman) hurry to a safe place after an assassin attempt kills the senator's faithful decoy, Corde (Veronica Segura).*
- 3.9 *Every sequence in the film was coded and each shot was numbered. These editorial notes for the Opening Curvium Platform (OCP) scene show that shot numbers increased in multiples of 10 and 100, to enable additional shots to be inserted if necessary. Each shot list details the number of frames as well as adjustments needed to the shots. OCP 220, for example, is 85 frames and describes Corde and guards exiting the ship. The notes list the elements that make the shot (flaming debris, dead Naboo soldier) and instructs that Corde should be replaced by a Naboo soldier in the shot.*
- 3.10 *Lucas supervises as finishing touches are applied to Verónica Segura's makeup and costume to highlight the extent of Corde's injuries following the explosion.*
- 3.11-12 *Senator Amidala costume designs by Iain McCuig (January 6, 2000). Padmé is no longer a queen so her costuming and makeup are not as elaborate. Both designs have been stamped "OK" and "Fabulous" by Lucas.*





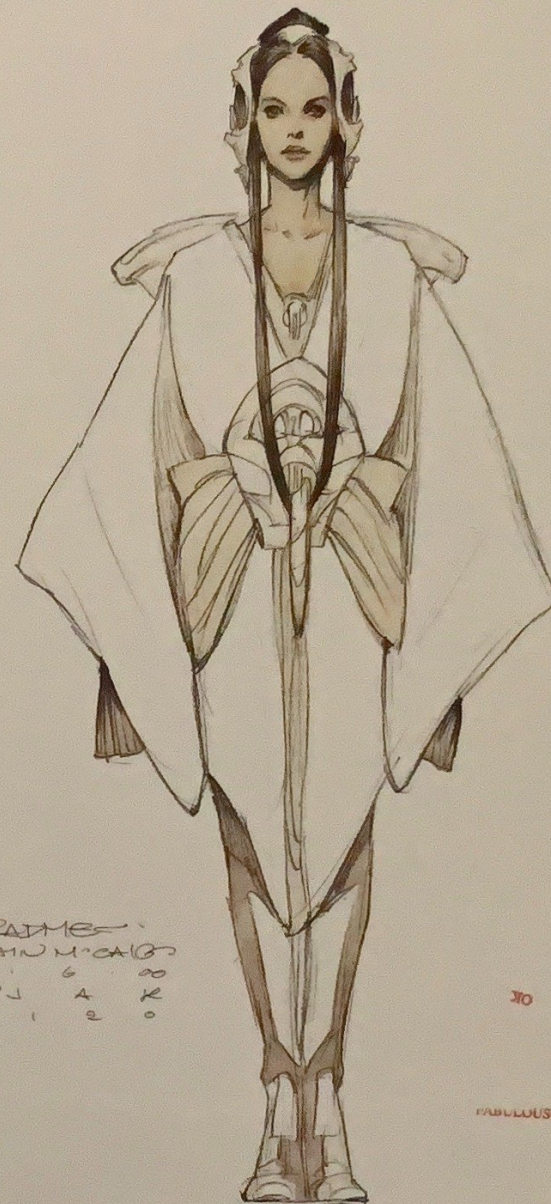
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Digital cameras—they were called video cameras at the time—run at 30 fps because that's the frame rate for American television. People call it 30, but it's actually 29.97. One of the problems we had is that for George to edit or view 24 fps material on a monitor it would need to be at an actual rate of 23.98 so it could better integrate with existing equipment and could be done sooner to meet our schedule.

That was another part of the process that we had to learn, which was that we didn't have time for standards bodies. We realized we needed to talk to the people that were building these products, and convince them to help us. It didn't make us any friends, but it was the only way we were going to get it ready in time.

Mike Blanchard Sony's broadcasting division is very profitable, but there was always the feeling that television was the little



"The Senate scene was one of the first things to be deleted because we wanted to get into the mystery of who was trying to kill Padmé rather than the political issues that were involved."

George Lucas

brother to the film industry. You had the film people high up in the stratosphere, with the directors of photography using 35 mm cameras and being very particular about the image, and way down here was broadcast doing their little television thing. They could not understand why the film guys were coming to them saying, "Hey, we want to use your equipment up here."

I believe we lost some critical time early in the project just trying to convince them that George was serious and would shoot a *Star Wars* movie with "broadcast" equipment.

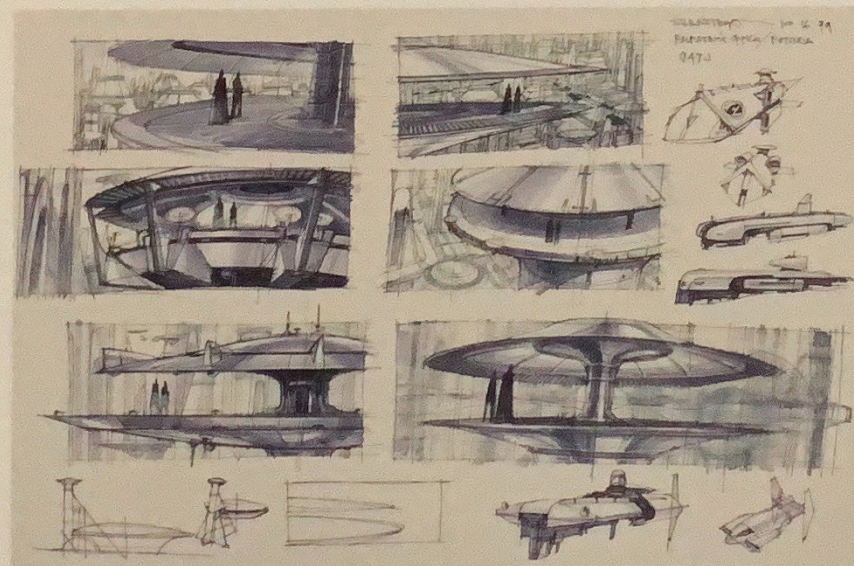
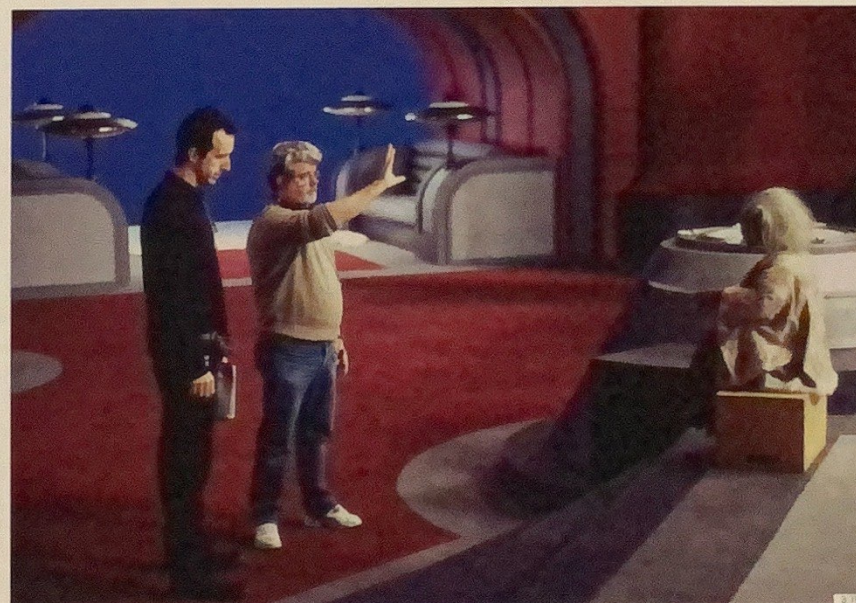
Rick McCallum We had this extraordinary meeting with maybe eight or ten Sony engineers, led by Takeo Eguchi, plus Fred Meyers and me at a Japanese restaurant. The Sony head didn't speak any English so it had to be all through translators. You could see he wasn't interested. Then I gave this passionate speech about how important it was and everything else. And then he said, "Well, what do you want me to do?" And then Fred took over. Fred had come up with the idea of the 24-frame camera and had figured out exactly what was going to be

needed for the whole postproduction workflow, which was the most important part, because even if we got the 24p and lens, we still needed to extract the information, convert it, and see it. So Fred drew it all on the paper table cloth. The head engineer stood up, he looked at it, he walked around the table a couple of times, and then he sat back down and did not say a single word for 25 minutes.

So for 25 minutes, everybody just sat there as he looked at it and then he raised his fist, slammed it down on the table, stood up, and said, "I can do it. I'll do it for you." Walked off. That was it.

Larry Thorpe George Lucas subsequently requested that we partner with Panavision as he wanted to use their lenses. In early 1997, we showed George and Rick the new HDCAM camcorder, and again we did film-out tests.

David Tattersall / Cinematographer I did a series of tests at The Culver Studios with the highest spec camera Sony had. I said to George that it's no good shooting a camera test for the new



3.13-15 Lined script for scene 4 in the Senate that was shot then deleted from the film. The senators discuss the need for an army and the possibility of war against the Separatists. Padmé attends the debate, despite the attempt on her life, arguing against the case for creating an army and noting that she has personally experienced the misery of war on Naboo.

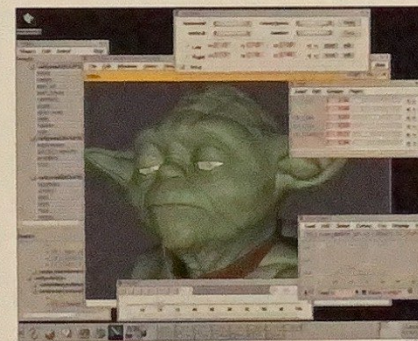
3.16 Senator Amidala states emphatically that she is opposed to a war: "Do not let fear push you into a disastrous decision." She is watched by Jar Jar Binks (Ahmed Best), Captain Typho, and Dormé (Rose Byrne).

3.17 Final frame showing Palpatine in his office discussing the political situation with Mace Windu, Yoda, and other Jedi.

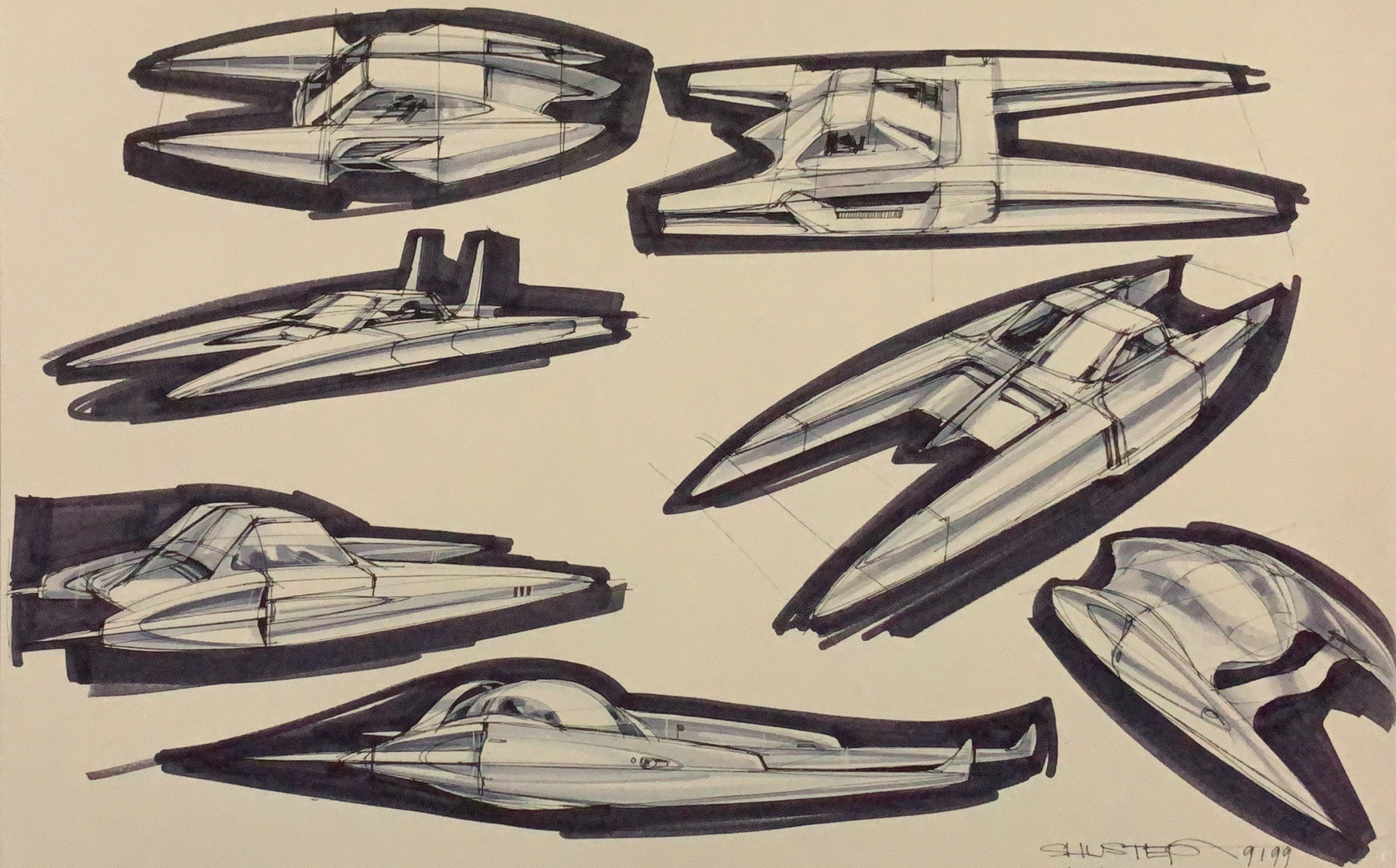
3.18 Jay Shuster's concept for Palpatine's office/rotunda (October 16, 1999). The implication is that Palpatine's office can only be reached by ship, thus retaining a large degree of isolation and privacy.

3.19 First assistant director James McTeigue listens as Lucas composes the shot for the scene in Palpatine's office. Although Yoda would be a CG character a puppet is positioned on a box so that the actors' eyelines match.

3.20 CG Yoda was animated using H.M.'s "Cart" software, shown here with Eye Editor, Curve Editor, and Mixer windows open.







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STUBER

"There were huge demands made on all of us; we had to draw faster and better. It was trial by fire."

Jay Shuster / Concept Artist

camera unless we shot with a film camera side by side without changing the lighting. We did a variety of shots with actors. We did macro close-ups, some fast-moving shots with motion blur, and with contrasty highlights—all the things that are normally a problem for video cameras. Sony and Panavision sent representatives to make sure that we didn't cheat.

Then we took both film and digital through the process of producing a negative, an IP (interpositive), an IN (internegative), and a release print, and then we had a big presentation at the Stag Theater at the Ranch for George and all the companies where we compared both versions side by side. You could see on the digital test that there were strange artifacts, step blur and halos behind the highlights.

George was not happy.

George Lucas I told them, "Please take this camera and make it 24 frames so we can use it in the film. We can't convert the whole industry. What we can do is convert your camera." Sony said, "But then it's not as good!" I asked, "How are you going

to break into the market? Look, we're going to shoot *Star Wars* on it, so it'll be a great showcase."

David Tattersall All the Sony guys came down to the front of the screen and had a huddle. They came back and said, "We know what we have to do. We have to produce a camera that shoots at 24 fps." That's where it started—the moment digital cinema began—when they agreed to make a 24 fps camera, progressive, not interlaced.

Larry Thorpe A working group made up of Sony Japan, Sony USA, Panavision, and Lucasfilm was formed and meetings were held at Skywalker Ranch every three months.

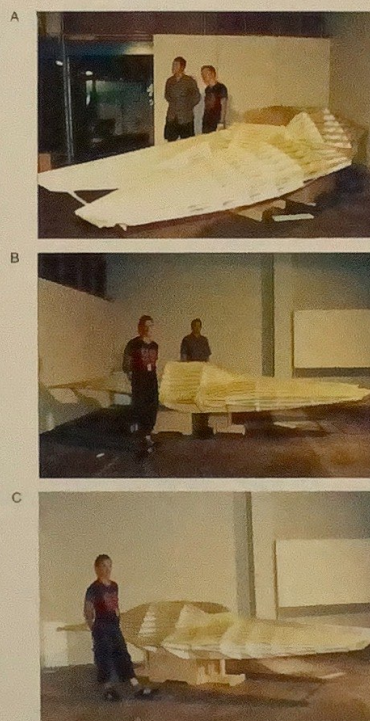
Rick McCallum We thrashed out thousands of details in relation to lookup tables, metadata, the camera itself, and what it needed to be able to do for us as well as the lenses.

Mike Blanchard I went through all the camera reports for Episodes IV, V, and VI and worked out the focal lengths of the lenses that George uses when he shoots a *Star Wars* movie. Then we went to Panavision and said, "Can you build two zoom



3.27

SPEEDER - general views



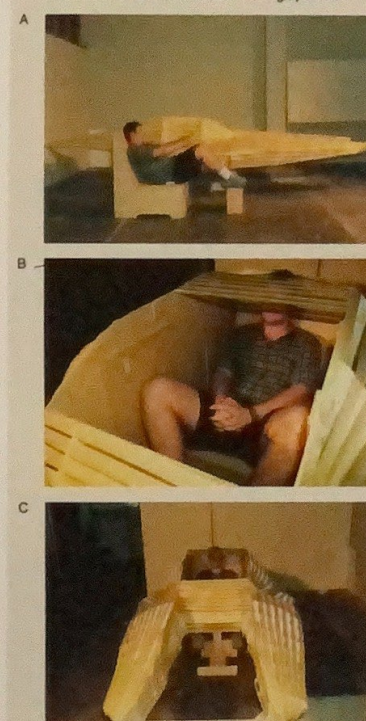
3.28

lenses that will cover this range?" That's what we got, instead of having primes like you normally would. There was just not enough time to get primes built for the new camera.

George Lucas I wanted to shoot *The Phantom Menace* on digital cameras but they couldn't get the cameras built fast enough.

Paul Duncan But you used a digital camera during the August 1998 pickups.

SPEEDER COCKPIT SPACE - 6'0" high person



3.29

3.26 Jay Shuster's concepts for bounty hunter Zam Wesell's speeder (September 1, 1999).

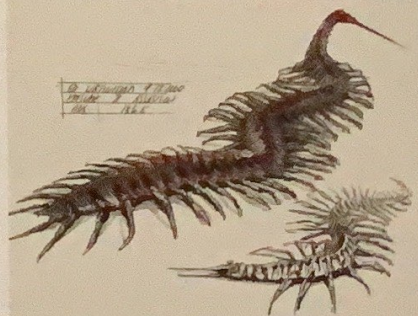
3.27 Doug Chiang's speeder concept (September 30, 1999).

3.28-29 Mock-ups of the speeders were constructed to check for scale as well as practicality for the pilot inside the cockpit. Two different sizes were built and then two people of differing heights (3'8" and 6") were photographed sitting inside. On the right the person's head can be seen protruding above the cockpit of the speeder. Note that these mock-ups are for a single person, but the final speeders accommodated two people.



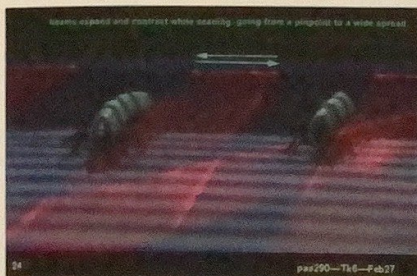
Princess Leia Organa — Coruscant Slave quarters

3.31



Wampa — Yavin 4
Princess Leia Organa

3.32



3.30 Lucas (right) directs Ewan McGregor inside Senator Amidala's sleeping quarters.

3.31 Dermot Power's costume design for Padmé's nightgown (March 3, 2000). With much of the film's design created digitally, it was common for multiple designs to be created simultaneously with slight variations to give Lucas a choice. Power notes that this is the cuffed sleeved version.

3.32 Ed Natividad's design for the insidious and highly poisonous Kouhuns creatures that Wosell sends to attack Amidala as she slumbers (April 12, 2000).

3.33-34 Alex Jaeger proposes for laser beam devices that scan the floor space to protect Padmé's sleeping quarters (February 27 and January 29, 2001). Although the lasers are emitted from the base of the door pillars and expand and contract, the Kouhuns still find a way through. The scanning lasers are blue in the film.

3.35 Padmé sleeps, unaware of the impending danger.

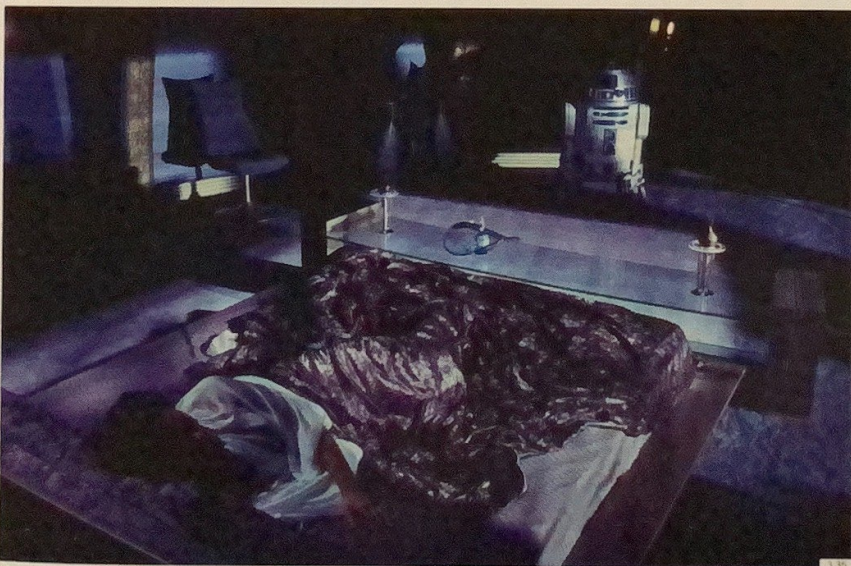
3.36 Just as the Kouhuns are about to strike, Anakin and Obi-Wan detect their presence. In this final frame Anakin is the first into the bedroom and swiftly dispatches the creatures with the sweep of a lightsaber.

Rick McCallum The midi-chlorian test scene with Qui-Gon and Anakin was shot on Sony's HDC-750, the traditional 30 fps, studio high-definition (1920 x 1080) camera. That scene also had a digital background and a digital sky, and we were reverting back to 24 frames.

Mike Blanchard It was recorded onto the HDD-1000 videotape recorder, which was a reel-to-reel one-inch tape system. They had to have this ridiculously fast-spinning head to get HD resolution—rotating at 5,000 rpm or whatever it is—so it sounded like a jet taking off. Obviously, you can't have it on a set, so we had a long umbilical from the camera and located the VTR off stage.

Rick McCallum We had to move the set closer to the stage door because the cable wasn't long enough. We shot for a week with that.

Mike Blanchard Putting those midi-chlorian shots into Episode I was great because it showed Sony. "Wow, George is not kidding. He will put something shot by broadcast cameras into a film."



Emotional Tools

Mike Blanchard As word started getting out about us trying to shoot a film with digital cameras, whenever Rick and I would go to LA, all we heard from cameramen and other people in the industry was, "a film negative is 8K resolution" (7680 x 4320 pixels).

Rick McCallum Most cameramen, when they've done a film, they have a print struck off the original negative. That print is shown by the Academy at a wonderful theater. But that's not how everybody else sees the movie. The cameramen and industry people don't go to Orange County or Kansas City or anywhere else and watch a typical film that's being projected.

Mike Blanchard The reality is you shoot the camera negative, you splice all the shots together to make the final cut, you copy it to make an interpositive, and from that make multiple inter-negative copies, and then from those you make thousands of copies for the release prints.

Paul Duncan So people in the theater see a third generation copy.

Mike Blanchard Correct. Sony and others have done studies on the actual resolution of a projected film print. Between the generational loss and the way film moves through the gate there is a major loss of quality and the image gets soft. The conclusion was that the resolution of the image was about 700 lines.

Paul Duncan So it was a similar resolution to high definition.

Mike Blanchard And this is without scratches, dust, dirt, hair, or taking into account the quality of the duping by the labs. More

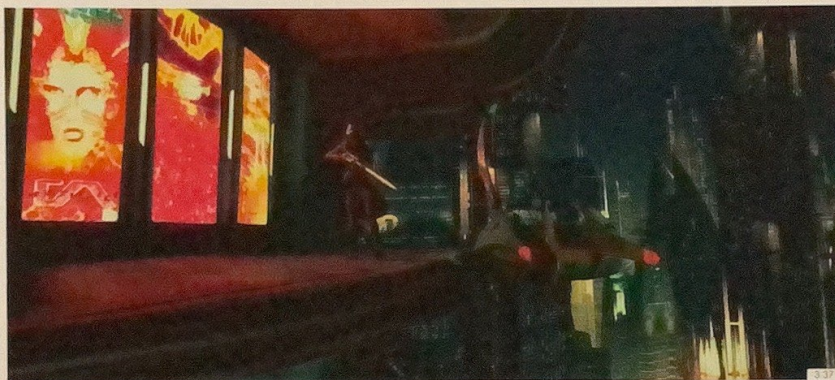
than anyone else in the business, George was acutely aware of how grim it was in theaters because he founded THX & TAP (Theater Alignment Program) in 1983. TAP would go around to theaters and test the screen luminance: "Guess what, you've only got eight foot-lamberts on the screen here. It's supposed to be 16fL," they'd do reports on image quality, image distortion, framing, masking, sound quality. "Oh, and by the way, you only have one speaker working"; and every other aspect of the exhibitor experience. You'd look at the reports and think, "You've got to be kidding me." They would assess the quality of release prints—the quality of prints coming out of the labs would vary—and grade them A, B, or C, so the A prints went to the best theaters with the best screens and best sound, down to the C prints going to the worst theaters.

So George had hard data about how bad it really was.

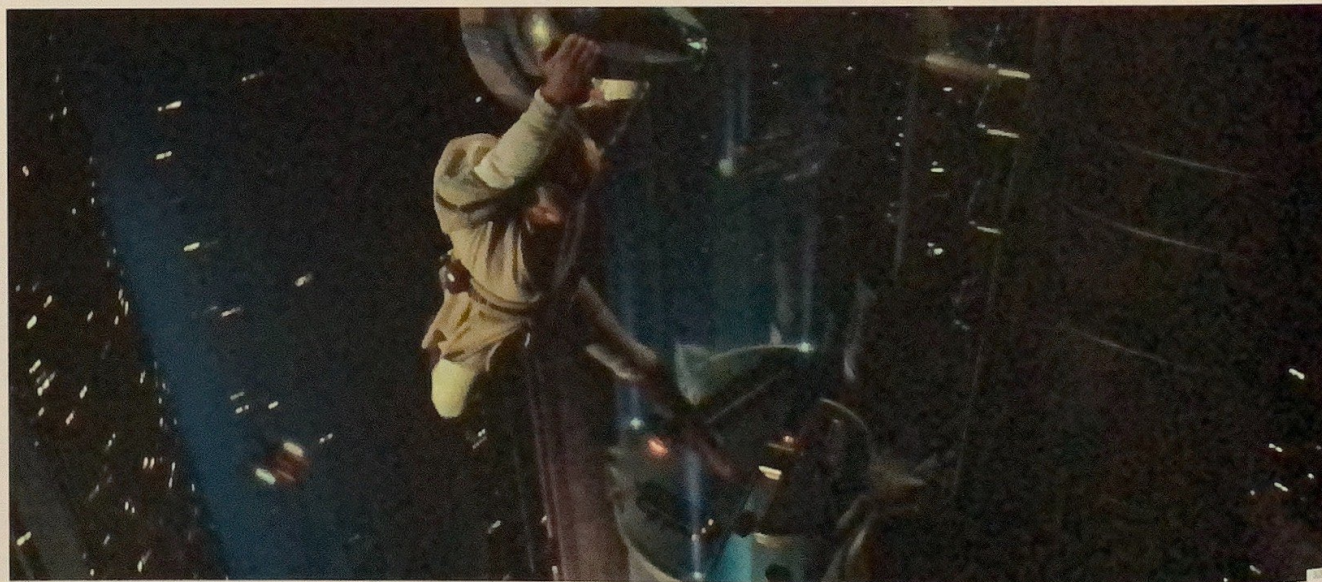
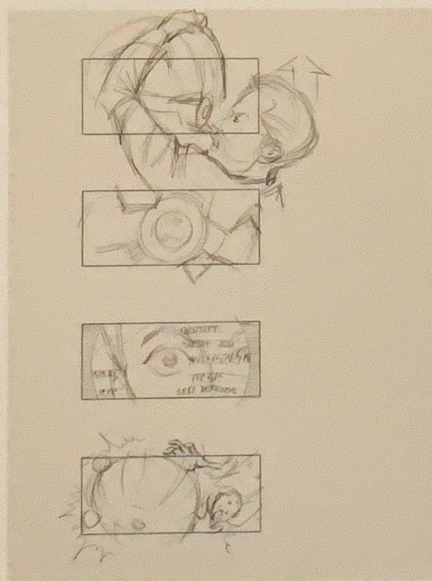
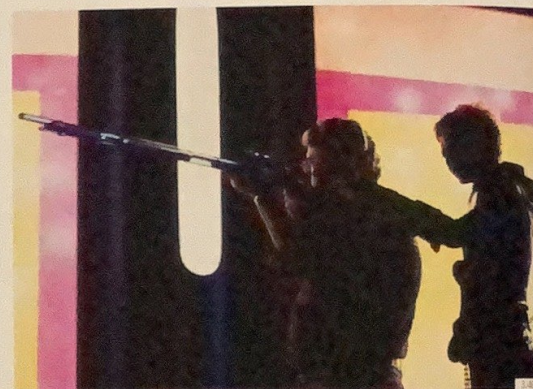
Rick McCallum We spend millions of dollars trying to get the best print and create the best soundtrack, so nothing is more depressing than going down to the local multiplex on the day the film opens and watch your release print in a theater where the projector is running at 50 percent of its luminance, the sound system sucks, there's no surround sound, there's no bass at all. Considering there are about 32,000 theaters in the United States, less than one percent can accurately reproduce any film that any filmmaker makes. It's pretty mind-boggling. We're practically into the year 2000 and we can't even create an atmosphere for an audience where they can actually see the film the filmmakers made. It's impossible for someone to judge *Star Wars: The*

“For Erik Tiemens and me, the city chase was like designing five to six mini cities.”

Ryan Church / Concept Design Supervisor



- 3.37 The final frame shows Zam Wesell (Leeanna Walsman) prepare to shoot down the probe droid that Obi-Wan has managed to catch just as it leaves Padmé's apartment window.
- 3.38 Warren Drummond storyboard concept for the opening of the speeder chase sequence. Obi-Wan grabs the probe droid and clings to it. The droid collects information about its assailant using a camera device—noting that it is a Jedi—and that the droid should defend itself. It tries to shake him off by making him fly into objects.
- 3.39 Final frame of Obi-Wan clinging to the probe droid as it flies across Coruscant.
- 3.40 Lucas directs Leeanna Walsman in the art of shooting down probe droids.
- 3.41 Ryan Church concept art for the upper levels of Coruscant, showing the wide variety of vehicles that hurtle through the city (February 1, 2001).



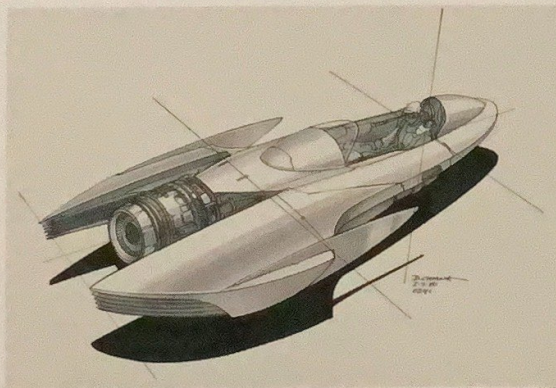
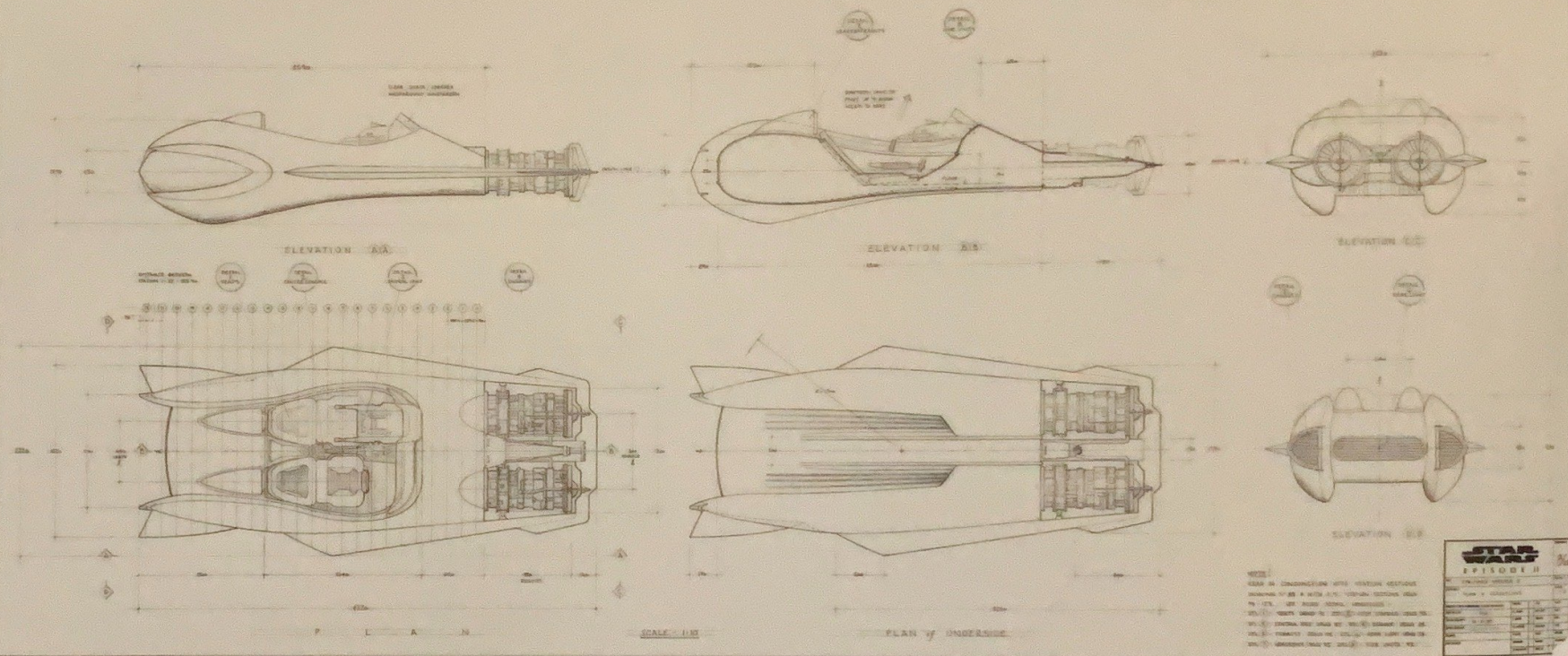


STAR WARS EPISODE TWO

CORUSANT SPEEDER II

PLAN & ELEVATIONS

SCALE - 1:10



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- 3.42 Detailed plans and elevations for the Corusant speeder stolen by Anakin to rescue Obi-Wan. These are drawn at a 1:10 scale by Peter N. Dorne (May 26, 2000).
- 3.43 Dong Chiang's concept for a single-person speeder (March 7, 2000).
- 3.44 Concept painting by Wilson Tang and Christian Almann for the drop zone into which Obi-Wan will fall after the probe droid has been destroyed. Lucas approved it May 10, 2001, but commented: "Make center look less like target."
- 3.45 Obi-Wan falls after the probe droid has been shot down. The drop zone in the final frame no longer looks like a target.
- 3.46-47 Ewan McGregor lands on the speeder, which was mounted on a gimbal. The gimbal, background, and crash mats were all blue so that they could be digitally removed in postproduction.
- 3.48 Final frame of Obi-Wan settling into the speeder after Anakin has rescued him from his fall. Ewan McGregor: "The speeder was rocking and it actually made you feel rather sick after a while. It was like going on a fairground ride over and over again but you're not allowed to go and have a hot dog."

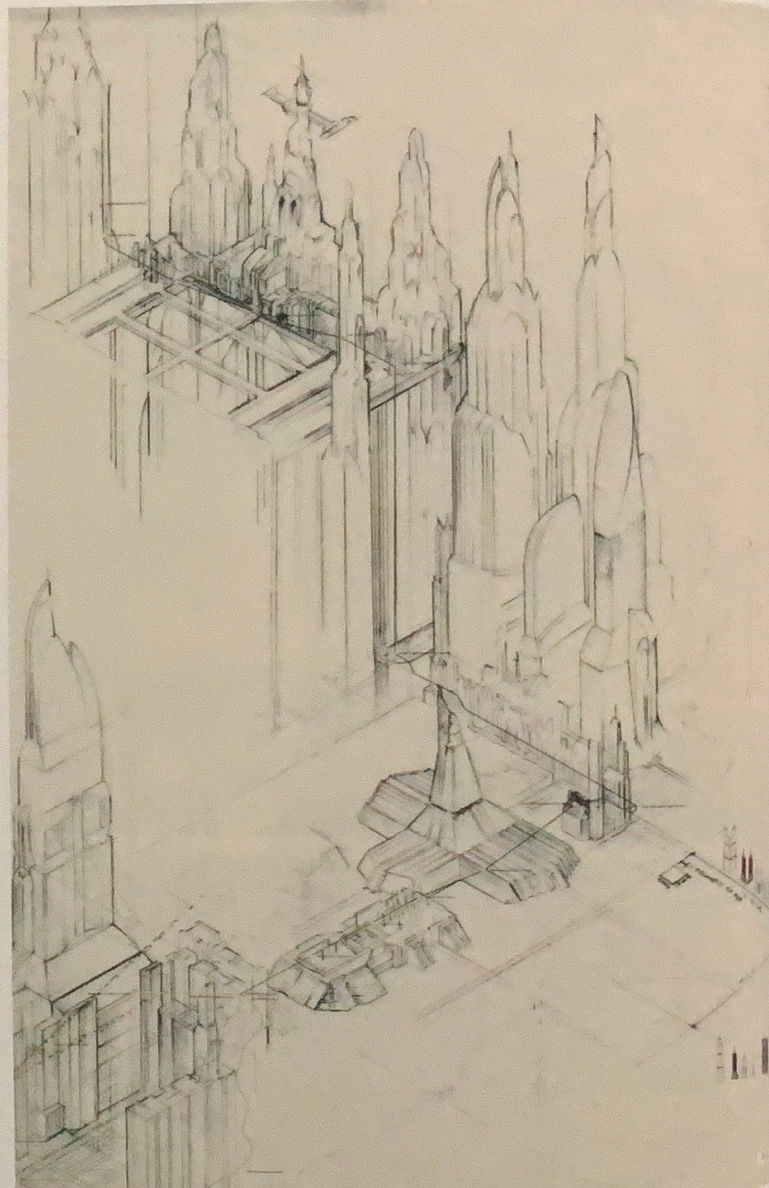
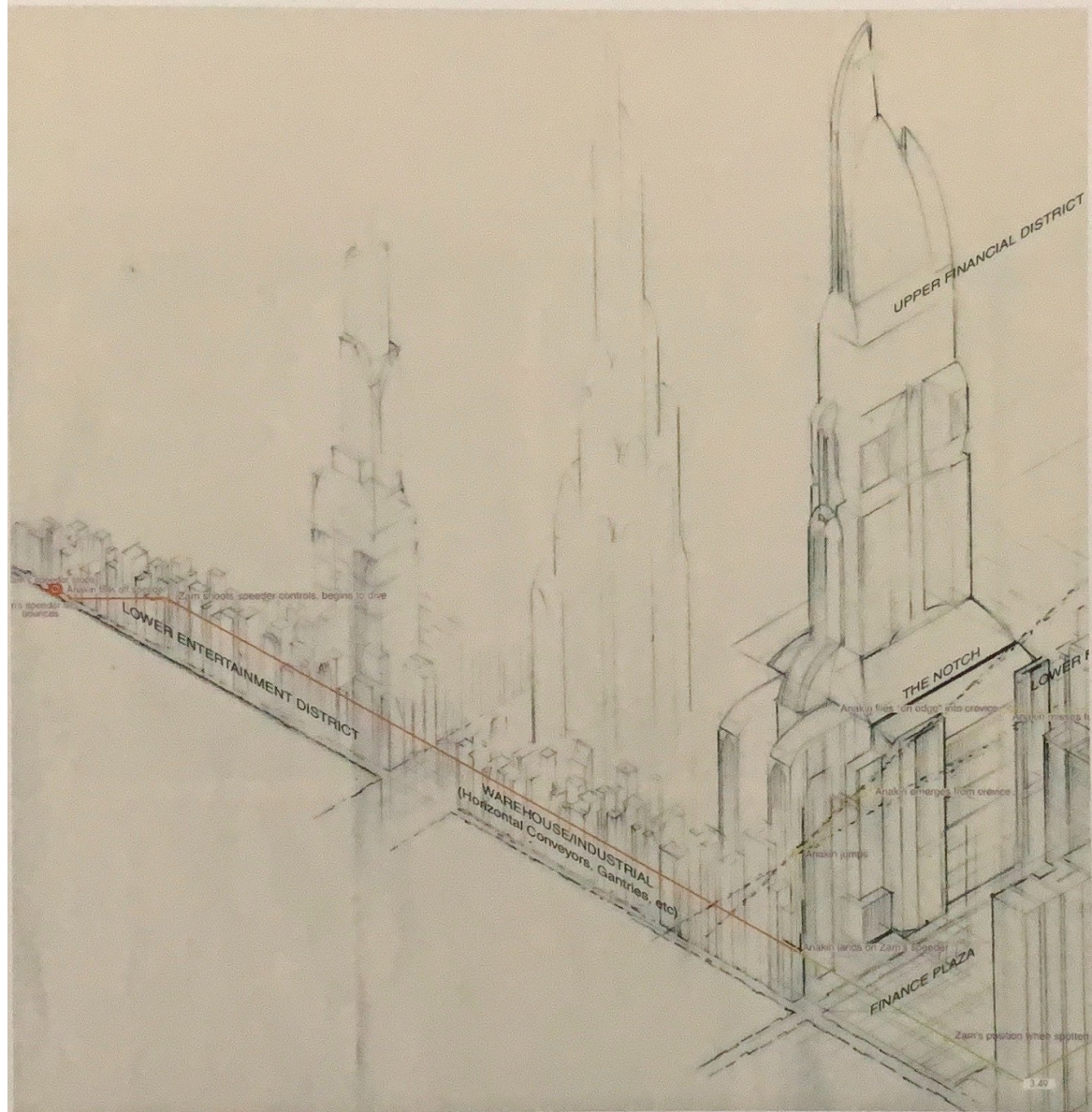
“What took you so long?”

Obi-Wan Kenobi

“Oh, you know, Master, I couldn’t find a speeder I really liked, with an open cockpit...and with the right speed capabilities...and then, you know, I had to get a really gonzo color.”

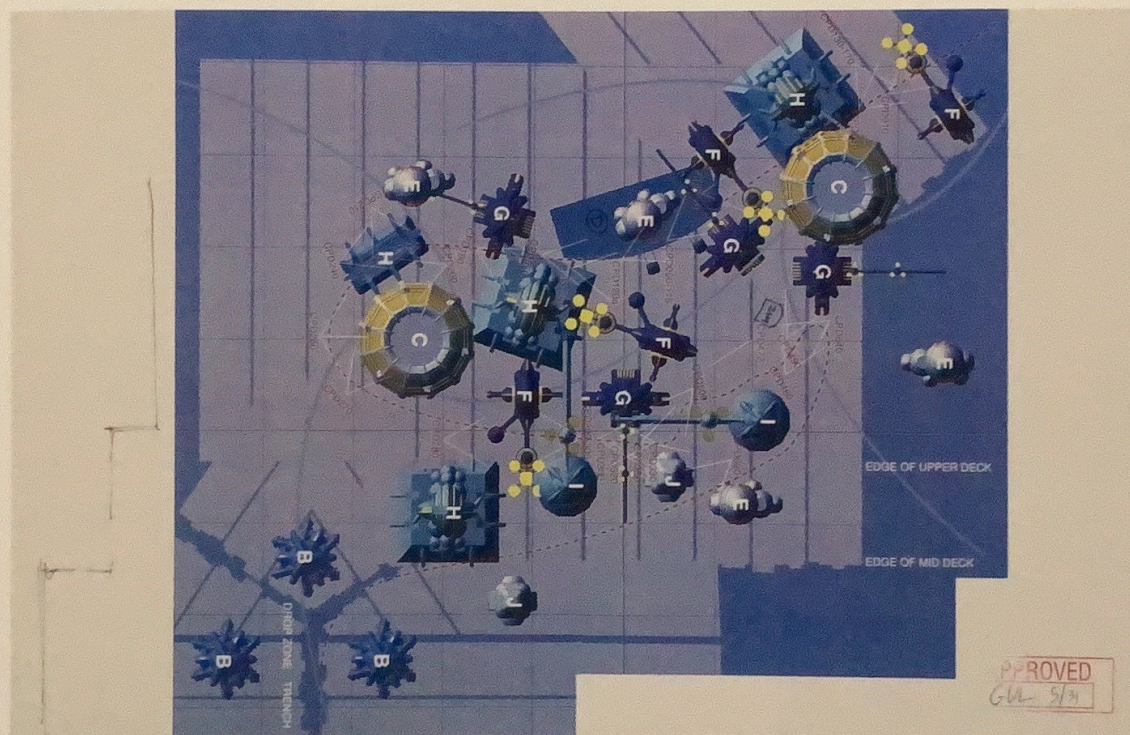
Anakin Skywalker





“George has always loved fast cars and he wanted to do a classic chase scene — only it’s high up in the air.”

Doug Chiang / Concept Design Supervisor

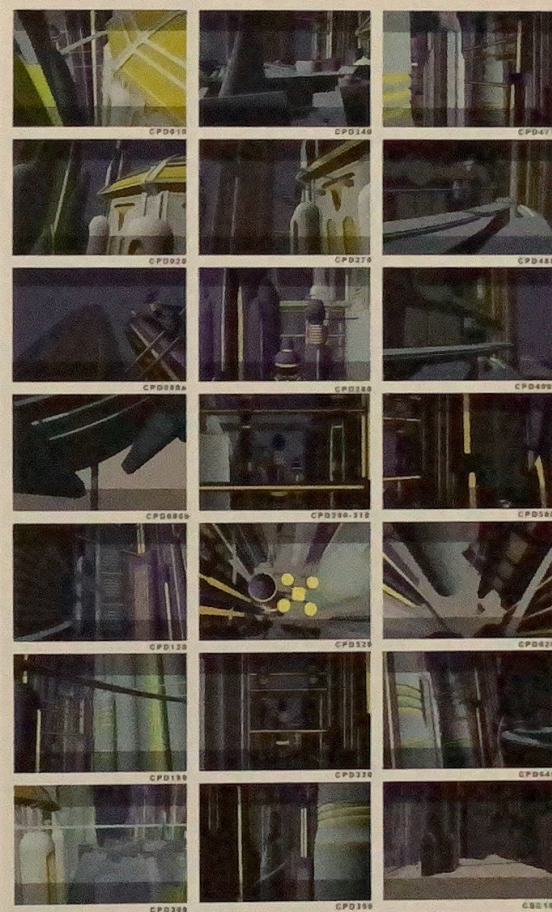


3.49–50 Detailed route of the complete journey of the speeder chase through the districts of Coruscant, drawn by Robert E. Barnes in 2001. Precise notes indicate exactly where particular events in the sequence happen (beginning top right) and the zones (upper, financial, warehouse) through which the speeders fly, notably where Obi-Wan falls (top right) and Anakin jumps from his speeder (center), as well as the trajectory of the speeders during their in-flight battle. It culminates with Wessell's speeder crashing in the entertainment district.

3.51 The route is translated into a computer model of the city. This plan view of the speeder chase through Coruscant shows Obi-Wan's journey to the drop zone as a dashed red line

(beginning top right), with each camera angle marked as CPD 010, CPD 020, etc. All the buildings are coded with each letter (B, C, E, H, J) representing a different type of construction. This means that the same building model can be dressed and lit differently using CG. This provided a quick solution to developing a complex background environment using duplicate models. Approved by Lucas May 31, 2001.

3.52 This document by Wilson Yang, dated June 5, 2001, shows each of the camera angles on Obi-Wan's route (CPD 010, CPD 020, etc.), which correspond to the plan in 3.51.



3.52

"When I'm designing I draw upon my life experience, like for the industrial area on Coruscant. As a kid I lived near a refinery in Southern California and they would light off things at night, which I thought looked neat. Even the cargo ships going through the harbor at night, were lit like spaceships. That captivated me when I was younger."

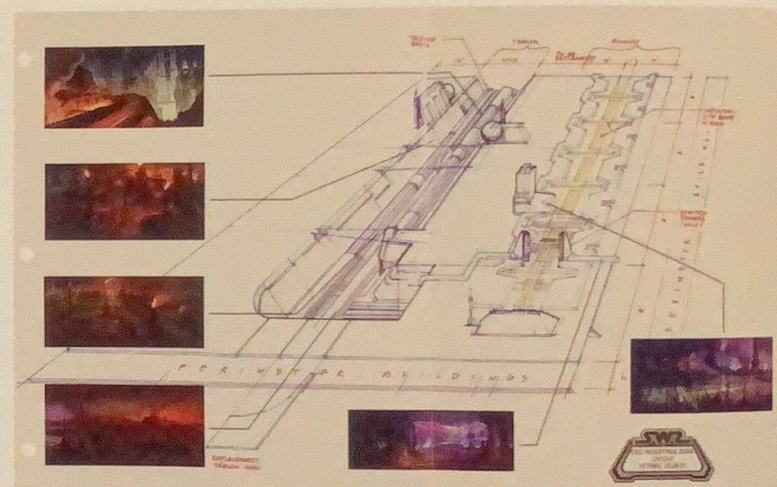
Erik Tiemens / Concept Design Supervisor



3.53



3.54



3.55

3.53-54 Erik Tiemens concept art showing the pursuit entering the industrial zone (February 1, 2001).

3.55 Plan view by Wilson Tong showing a more precise layout of the industrial zone, augmented with concept artwork (March 29, 2001). H.M. built this as a 20 x 30-foot model at 1:72 scale and filmed it for the scene.

3.56 Shot list for the electrical industrial district part of the Coruscant speeder chase, which combined a miniature model, CG sets and effects, live-action plates, animated electricity, as well as existing sparks and fireballs in the effects library. Detailed requirements, such as, "Be sure that electrical towers can be seen at the end of the shot," are specified.

3.57 Concept art by Erik Tiemens for the refinery's power couplings through which the Jedi will have to fly, receiving a nasty electric shock as they do (February 1, 2001).

3.58 Zam Wesell about to shoot the power couplings.

ELECTRICAL INDUSTRIAL AREA: Fly very close to ground throughout Electrical zone.

9. CISC240 Shoot the top of Electrical industrial zone with the above scene.
10. CISC240 Zam POV circles out of Chancelor and search to reveal Electrical zone. Be sure that the electrical towers can be clearly seen at end of shot, which will require an extension on the track with the change over that a more accurate representation of ship's corner, which would touch off bottom of set, thus allowing us to get further back.
11. CISC240 End of electrical tower rising for by Zam's rocket.
12. CISC240 Why pan on Zam leaving electrical area, through electrical towers. Begin multiple electrical light interaction. Shoot electrical industrial zone for by background as a shot.
13. CISC240 Looking down towards set as they rise into electrical towers. (Similar to inside of CISC270) Shoot electrical industrial zone for background.
14. CISC240 Look back at Zam again, pulling out gun to electrical tower area. Saw only electrical set in fog.
15. CISC240 State on first as they get closer to electrical towers. Same area as beginning of CISC270.
16. CISC240 Jet bridge clearly continues to end shot. (See CISC270, but further down other electrical towers)
17. CISC240 Looking back and across scene as leaving electrical industrial zone. May need to extend track to get set far from model.
18. CISC240 Best close fly up from electrical industrial set off buildings. End of set. Take the new ground building in atmosphere as to end on our set for by where fly through. Do not make electric the scene that makes by automatic.

3.56



Phantom Menace in 95 percent of the theaters it screens in. Viewers don't have access to some of the emotional tools we have to be able to express ourselves.

George Lucas This is the major reason for digital projection. All the sound and image problems go away, and whatever you see in the screening room at the studio is the same quality you get in the movie theater. That had never happened before.

Visual Clarity

Doug Chiang / Concept Design Supervisor In May 1999, about a week and a half before the release of *Episode I*, George came in and said, "Okay, let's start *Episode II*." I thought we were all going to take a break...

George asked me and Iain McCaig to start conceptualizing. Even though he didn't tell us what the story was, he vaguely gave us an idea of who some of the characters were, what types of environment, and so we just sat down and started drawing.

We had already developed some of these worlds, like Coruscant, so the foundation was there and we knew the aesthetic guidelines. For *Episode II* we were honing that vision and then adding a handful of new designs that George wanted, like the rock world Geonosis and the water planet Kamino, where the clone troopers are grown.

Paul Duncan The very first thing that you drew were clone troopers on what looks like spider droids.

Doug Chiang When we were designing *Episode I* there was no Empire or Rebels so the shape language was blended. For *Episode II* he wanted to begin delineating a difference.

When you look at the original trilogy, the Empire and the stormtroopers are technology-based, while the Rebels and the good guys are organic and nature-based.

So that spider droid idea was to convey the idea that the clone troopers are going to deviate toward the Empire. Let's give them technological walking creatures, mechanical beasts. In contrast, the good guys would be riding animals.

Paul Duncan That idea is used explicitly in *Episode III* when Obi-Wan is on the boga and General Grievous is...

Doug Chiang On the wheel bike. Exactly. It's just like on Hoth in *Episode V* when you have the AT-AT walkers and Luke and Han ride the tauntauns. The original trilogy has a visual clarity in terms of good and bad, color palettes, and shape language, and we're laying the foundation for that in the prequel trilogy.



- 3.59 Anakin has jumped from his own speeder and lands on Wesell's in this final frame.
- 3.60 Final frame showing Anakin clinging to the exterior and using his lightsaber to try to gain entry into the cockpit.
- 3.61–62 Filming Anakin hanging onto Wesell's speeder.
- 3.63 The full-scale build of Wesell's speeder, mounted on a gimbal that can move in multiple directions. The glass on the cockpit's passenger screen is broken where it is pierced by Anakin's lightsaber.

But George took a little detour and wanted to try something a little bolder for Kamino. He was very fond of 1960s science fiction so specifically asked us to come up with a similar look, which was this very slick, high-tech world, very clean white surfaces with plastic vacuum-formed furniture. It's a look that hadn't really been explored yet and it was fun to get into ultrasleek shapes.

The Kaminoans are stylized *Close Encounters*-type aliens—very tall characters with long necks and small heads. We had developed some of those aliens for Episode I and George wanted to explore that even further here. These elegant, graceful figures fit very well in a water environment where everything was clean, sterile, and sleek.

George wanted the Geonosians to be like termites. They had two different classes; the upper class would have wings that would fly; the lower class would be the drones who would do all of their labor.

For Episode I I designed the Neimoidians with long heads, with the idea that they had built the battle droids in their own image. The head design for the Neimoidians changed, but we revisited the original idea by turning the Geonosians into the engineers who created the battle droids, and so the Geonosians had the long heads. This fit into the idea that they were insect-like creatures. They are the Gungan equivalent in this film—an exotic society with exotic technology. But it has a slight twist. Instead of the Gungan Art Nouveau look, we're going more with a Gothic rock look for the rock world.

A Continuity Issue

George Lucas Episode I was made in Leavesden in the UK, and it was great. The only reason we didn't go back there was because Warner Bros. took it over for the first *Harry Potter* movie. They asked, "Can we use it while you're gone?" But by the time we wanted it back, all their roots had been planted in the place and they were not going to give it up.

Rick McCallum We planned to shoot in New Zealand, but they didn't have enough construction crew—we needed about 650 people.

Gavin Bocquet/Production Designer We made two trips to Sydney in July and August 1999. We needed to find out what we could achieve there with local labor and facilities, and what we'd have to bring in.



“We had a shot in the speeder chase where Anakin’s hanging from Wesell’s speeder and his legs are falling off the bottom of the frame. George wanted to move the action further away from the camera, so we had to replace the legs on the live-action Anakin in the wide shots. We thought that was going to be really hard, but it actually went together pretty well.”

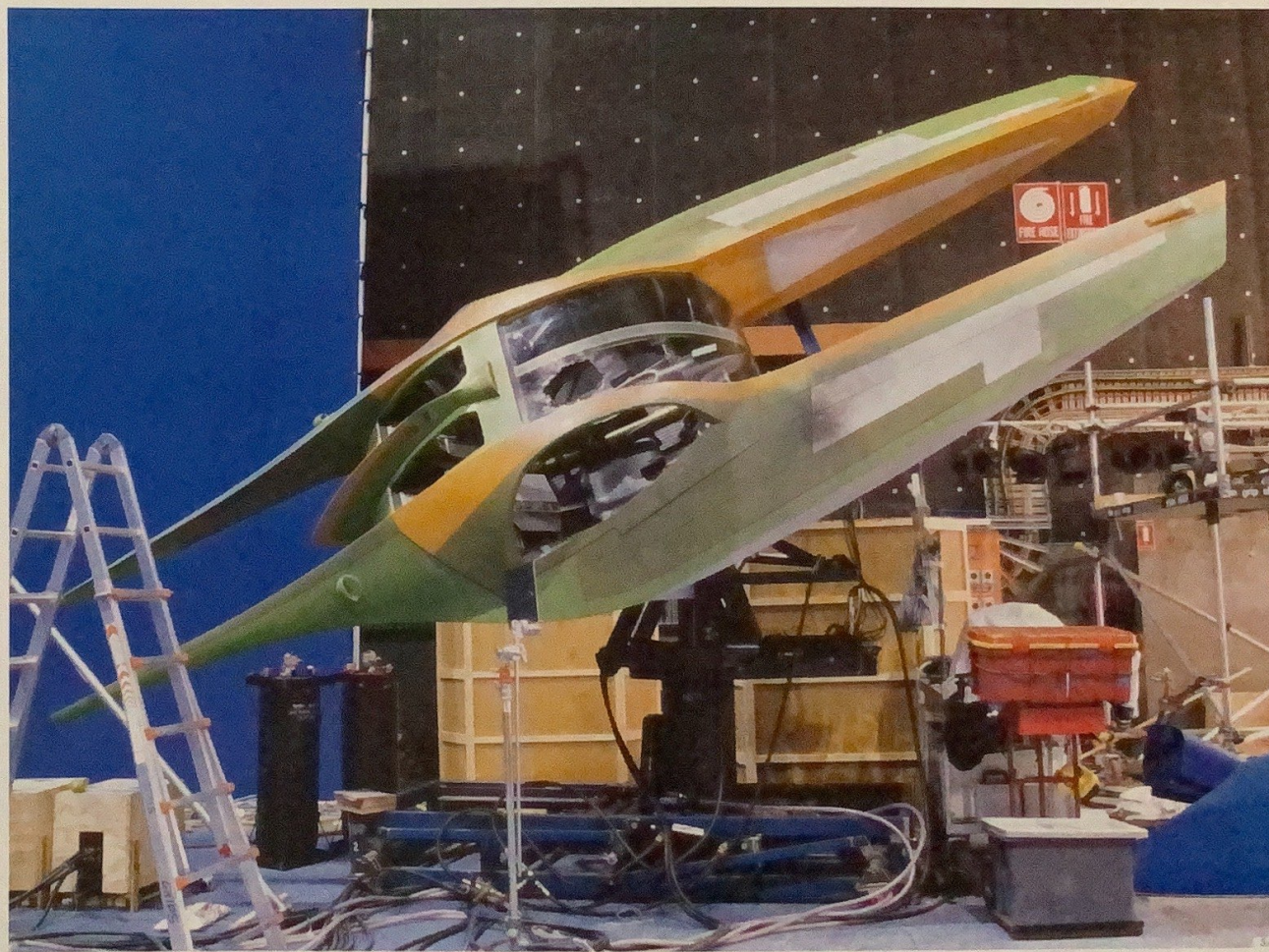
John Knoll / Visual Effects Supervisor



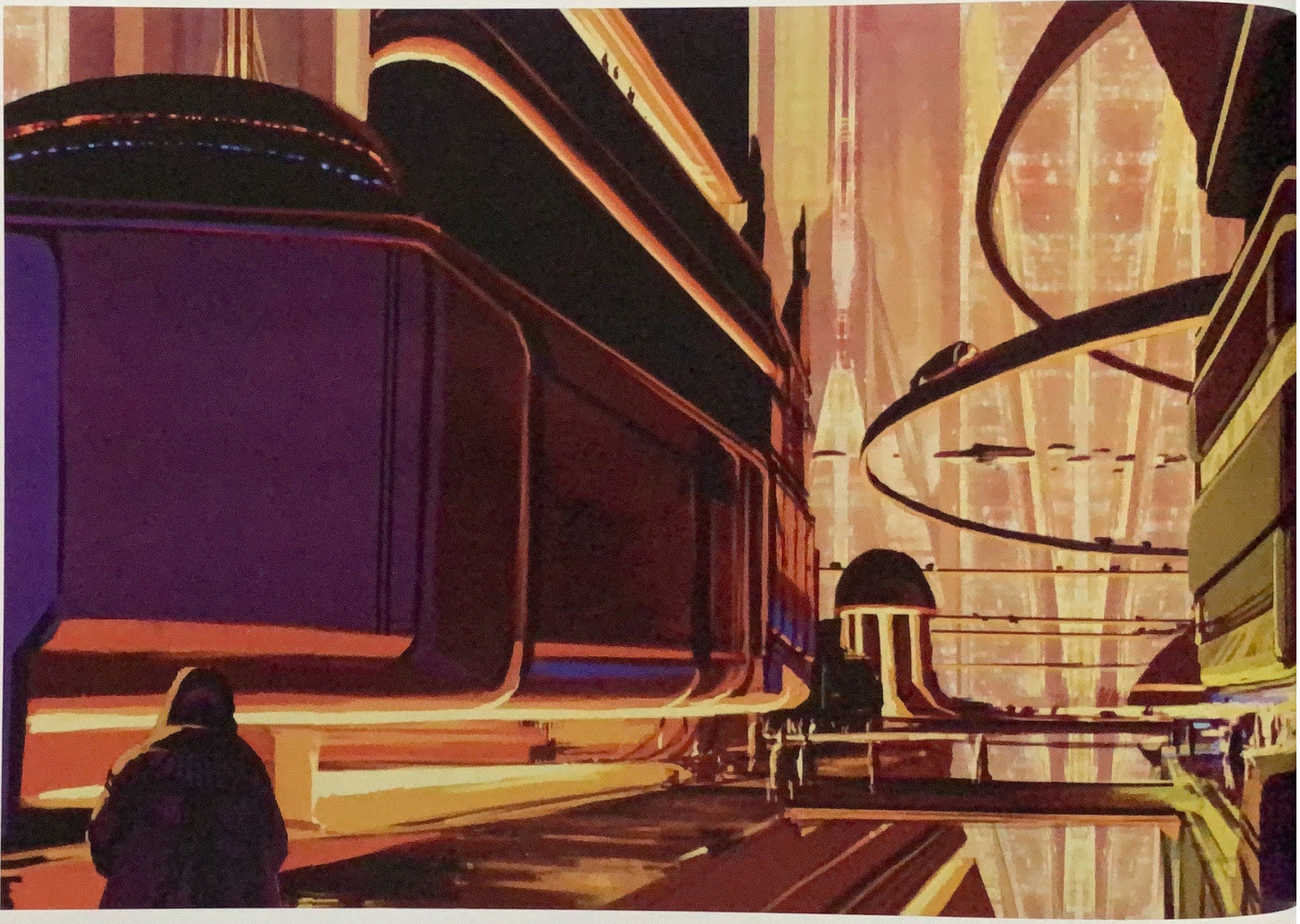
3.61



3.62



3.63



"I push people a little bit farther than I think they can actually go. And then they always surprise me by getting there."

George Lucas



3.04 Concept art by Doug Chiang showing mid-level Coruscant society (November 4, 1999).

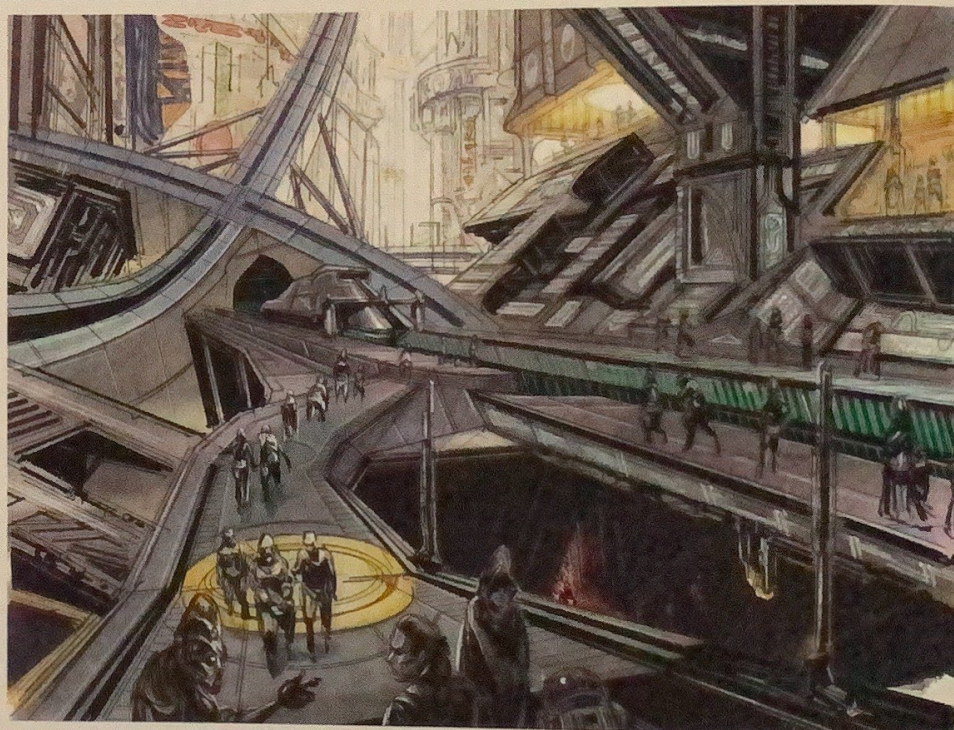
"We were going down to street level to see a Coruscant we'd never seen before. George threw down the gauntlet when he said it'd have to look better than Blade Runner."

Doug Chiang



ED NATIVIDAN 10-15-99 EPISODE 2 CORUSCANT STREET LEVEL Q33 E

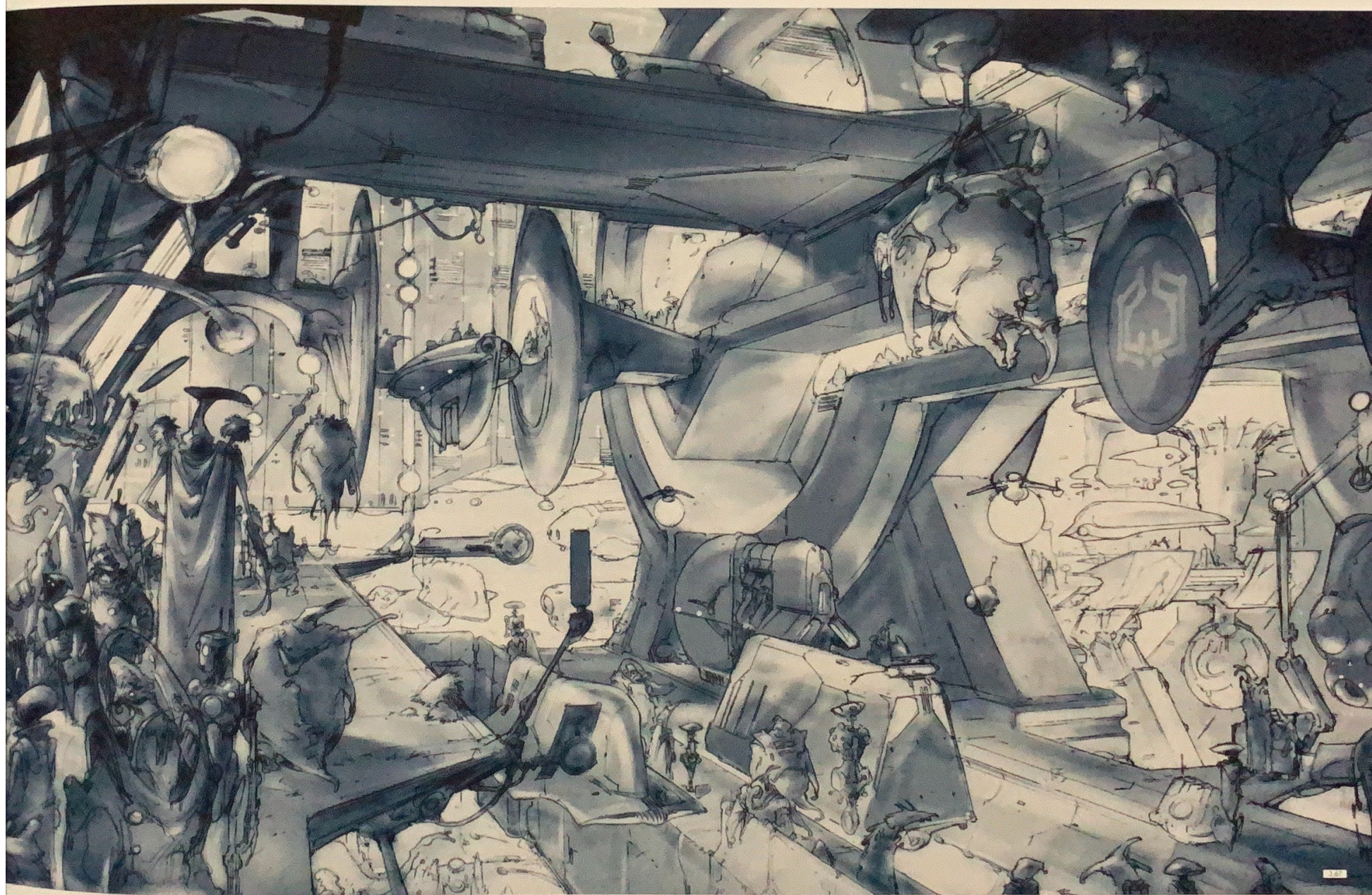
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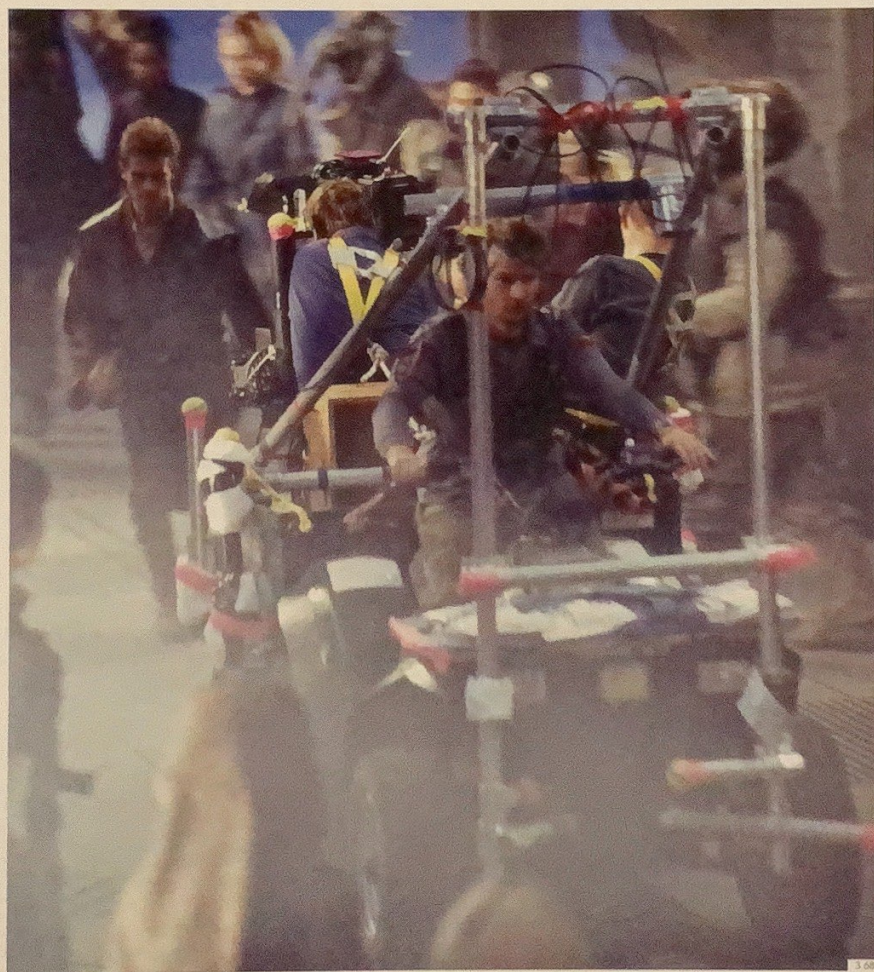
3.65-66 Ed Natavidan's concepts for the street-level districts of Coruscant show crowds of citizens on multiple levels (October 15 and November 4, 1999). Lucas specified the inclusion of a train, a detail that made it into the film.

3.67 Stephan Martinier's concept for street-level Coruscant and the denizens within (November 7, 1999). All the concept artists had free rein to create designs wherever their imaginations took them. Lucas made his films in a nonlinear way. This process enabled concepts to form and develop, providing inspiration for the plot as well as the overall aesthetic. These designs could then be reviewed and revised, allowing the story and imagery to evolve as the production progressed.



"We go chasing through the streets. That was lots of fun to shoot, knocking extras over and I fell down a few times. You get lots of cuts and bruises filming this."

Hayden Christensen



- 3.68-69 Shooting Anakin as he pursues Wessell through the streets of the entertainment district. The set was compact, so for some shots Christensen ran in a circle, which meant it was easier to keep him in focus.
- 3.70 Dermot Power's concept art for a couple of Coruscant locals (November 12, 1999).
- 3.71 Final frame of the street-level entertainment district in its sleazy neon glory as Obi-Wan lands the speeder.
- 3.72 Ryan Church's concept for a brightly lit entertainment district as Wessell's speeder (shown in yellow here) is about to crash (February 1, 2001).
- 3.73 For the entertainment district a minimal set was built on the Far stage and a 23 x 50-foot staging area containing up to 30 buildings was built for the H.M. model shoot. Buildings (like Dex's Diner, bottom left) were reused, reconfigured, and refit in different colors for the model shoot. Here model makers Aaron Hays and Grant Imahara dress the set.



Rick McCallum Fox were contemplating making the former Sydney Showground at Moore Park into a studio and theme park.

The studio director, Kim Williams, said, "If you make the commitment for two films, we will finish the studio." So we said, "Let's go for it."

Gavin Bocquet Rick said that he couldn't take the film to Australia unless he was allowed to bring his group of outside technicians. It was a continuity issue, there were various sets that were going to be repeats from the last film, and that would be hard to have a completely new group of people building those sets. There was logic in taking people who'd worked on the first film, people who knew Naboo and Tatooine and Coruscant. Rick negotiated all of that before he agreed to take this movie to Sydney.

Rick McCallum Another factor was the cost. The Australian dollar crashed so the first year it was something like 60 cents to the US dollar, and the third year was like 55 cents to the US dollar. So, for example, I think we made Episode II for around \$32 million after the rebate, and then the rest were visual effects.

In England it would have cost another \$15–20 million and there wasn't a rebate system at that time as there was in Australia. Of course the Australian crew was 25 percent cheaper and we were going to shoot during their winter, when the weather was very mild, so it was perfect.



3.72



3.27

A Human Saga

George Lucas When *The Phantom Menace* came out in May 1999, I had to do some publicity in Europe. I went on vacation with my family, and looked for locations at the same time. I needed another view of the Naboo Palace, but I couldn't build one as I had done on *The Phantom Menace*, because it was only one scene. So I had to find something that would fit into the environment that we'd already created. I also needed some hideaway where I could tell the love story. When I saw the little Villa del Balbianello on Lake Como in Italy I thought, "this is perfect for the romantic scenes where Anakin and Padmé fall in love." It's the same with the Plaza de España in Seville, Spain. So I picked both locations before I wrote the scenes. For a change I had the exact locations, but not the exact scenes.

Star Wars is a human saga about the struggle between what is good and what is evil; it also deals with more personal issues of growing up, family, and politics. I have tried to bring together



3.73

"The first drawing Doug asked me to do was the bottom of Coruscant. A lot of sunlight doesn't reach the bottom, so we wanted to echo the look of a dark, foreboding environment."

Marc Gabbana / Concept Artist



a lot of the ideas that have existed over the last few thousand years and put them into a new story primarily for young people, to understand human heritage, not just of one particular country, but the human heritage that we all share.

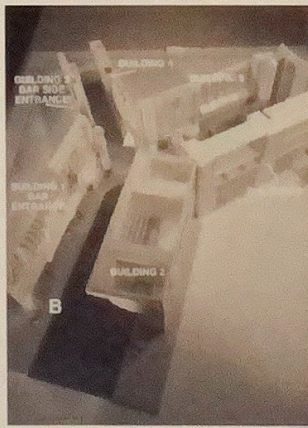
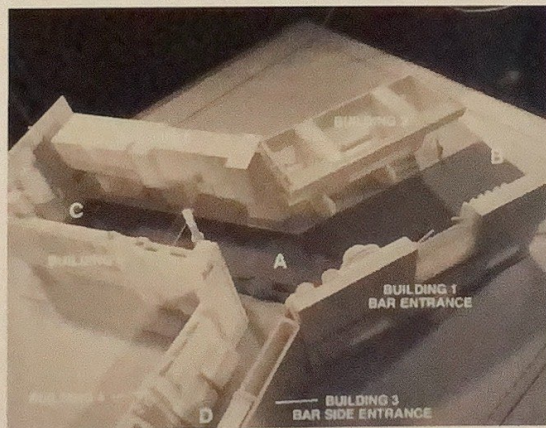
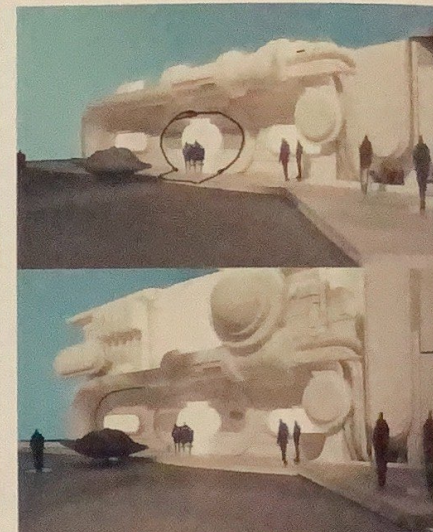
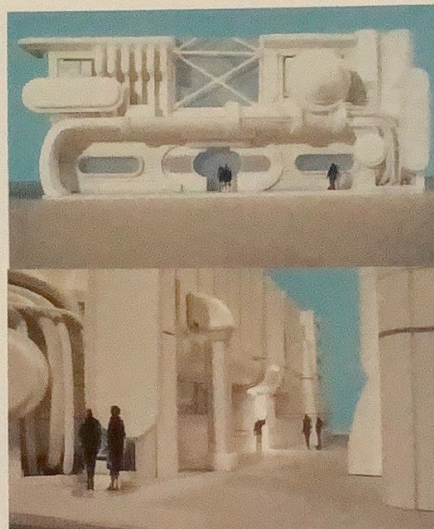
Paul Duncan You started the screenplay in September 1999.

George Lucas The major story that is being told is actually two stories that are running parallel to each other on the grander picture. They are, how does good become evil and how does a democracy become a dictatorship, which is the social version of how does good become evil. That's the main theme of this one, not simply good vs. evil.

Episode II has a love story, so it's less of a kids' movie because they don't like to sit through all of that yucky stuff. But it's still aimed at the same age level, so it's going to be a real challenge for me to get them through that part.

Paul Duncan We're seeing Anakin turning to the dark side through the prism of the love story. Padmé comes across as a very strong character because she's both active in the political arena and she's a fighter.

George Lucas She's grown up. The whole idea is that the characters grow; they become something. They're not the same character in all three movies. In the first movie she's young, she's a queen, she's feisty, but she's still 14. Anakin's 10. In the second movie they are 24 and 20. She's now been in politics for 10 years while Anakin's almost a Jedi.



But Anakin's also naïve, especially around her. He's falling in love, but he doesn't really know it. And it is forbidden.

Anakin had a crush on her when he was little. She dismissed him because he was just a little kid, but she liked him, like as with a puppy. Then when he came back and he was much more petulant and much more of a person, that changed the dynamic between them in terms of that love relationship.

Paul Duncan Even though she says, "No this can't happen," she still has the token that he gave to her as a boy. And then at dinner, she dresses seductively. Whether she's aware of it or not she's sending signals counter to what she is saying.

George Lucas And he's falling for it. It's inevitable that they're going to get together.

The films were always political — it's just that in Episodes IV–VI the Empire had already taken over so the politics were distant. Also, we didn't have the money to show Coruscant, only what was going on in the outer reaches of the galaxy. And I was loath to have Obi-Wan and Luke sit and say, "Back in the days of the Republic..." "What happened to the Republic?" "Well, it was given away by the people..."

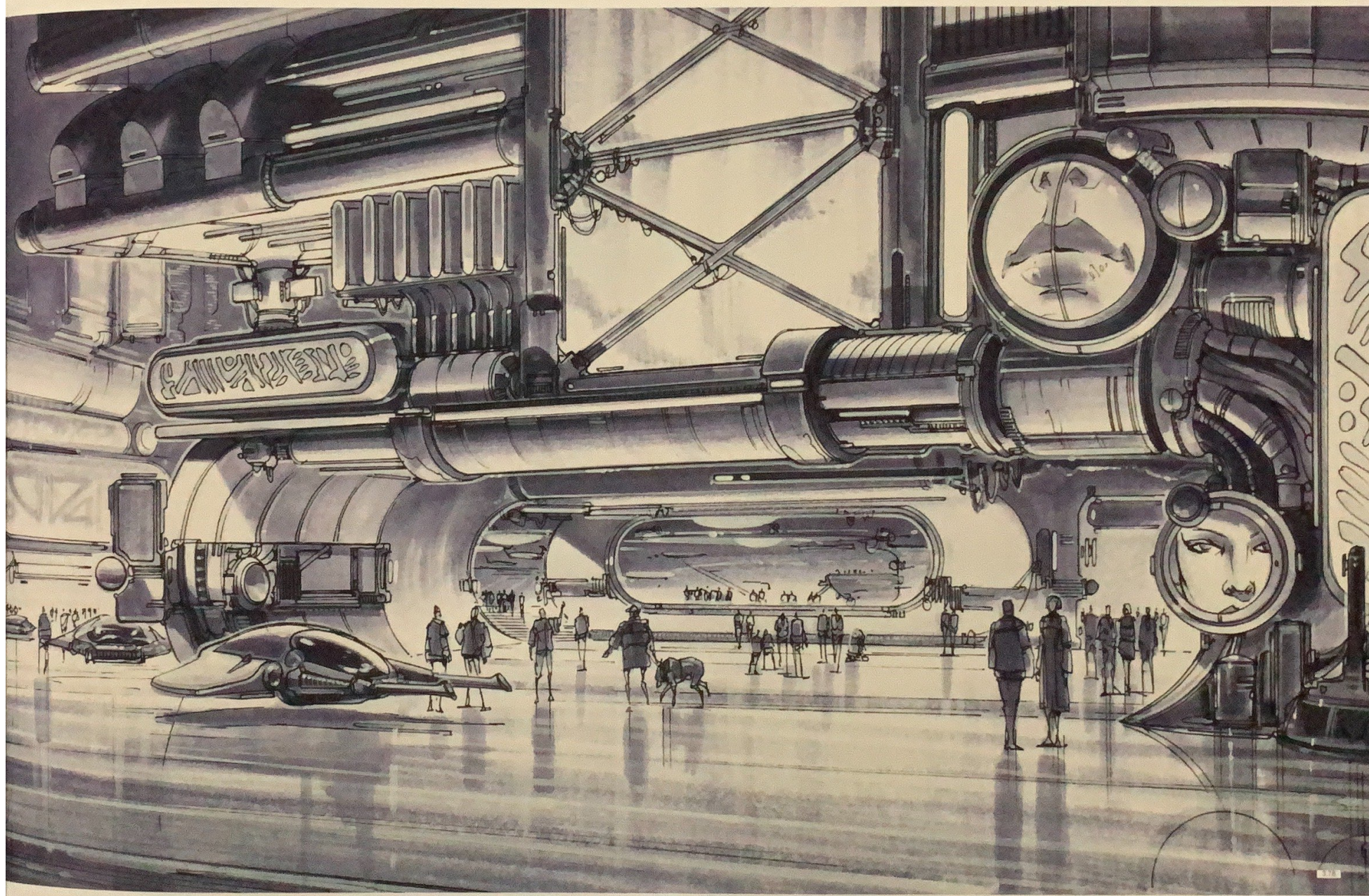
3.74 Obi-Wan has retrieved Anakin's lost lightsaber and reminds him, "This weapon is your life."

3.75 Plan views of the Coruscant street set. The Y-shaped set was constructed so that different scenes could be filmed on the same set when shot from different angles. Each element of the set has been labeled A, B, C, D, and the perspectives from each can be used for a different setup. A-B, for example, is the bar entrance. This model demonstrates how the production maximized the use of space.

3.76 Foamcore models of the bar entrance and the side street were photographed and digitally manipulated. It was proposed that the bottom of the sets were built, and these images show the CG set extensions above.

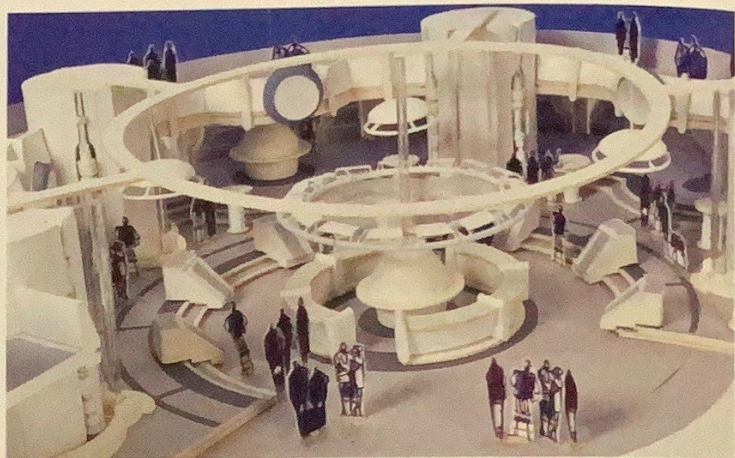
3.77 The top image shows the proposal for one story to be constructed and the other story (as shown in the image beneath) would be added in postproduction. The black line around the entrance in the top image indicates a proposal for an even smaller set, comprising only the bar doorway.

3.78 Marc Gabbana's concept for the entertainment street and bar exterior (November 22, 1999).

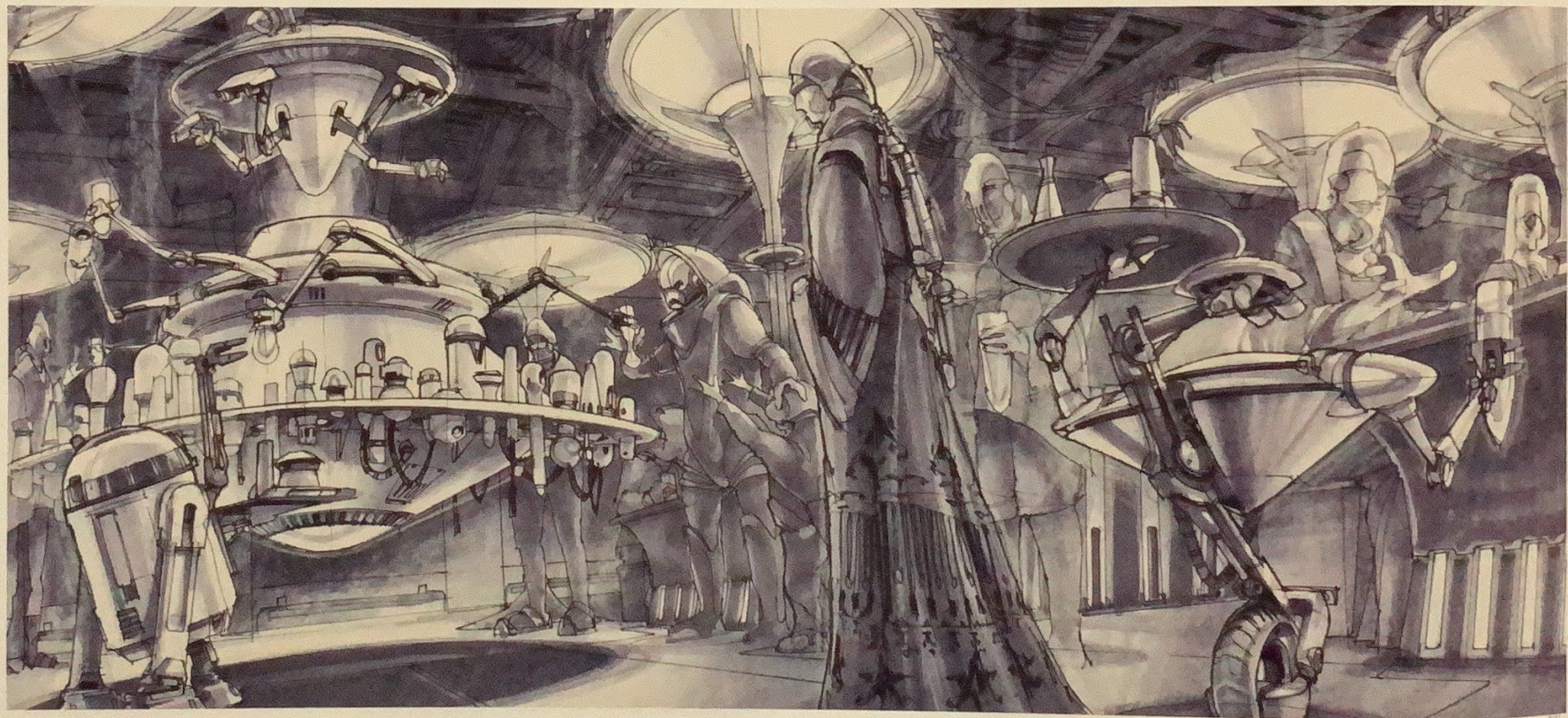




1.79



1.80



1.81

"The Coruscant bar was less of the cantina from Star Wars and more of a nightclub."

Jay Shuster



- 3.79 Ed Natividad's concept for the bar interior (December 15, 1999).
- 3.80 After concepts were approved, maquettes were created to test for the practicality of construction, as can be seen for the nightclub interior. When these had been approved set build would commence.
- 3.81 Jay Shuster's concept for the bar interior features a droid barman and waiter (December 7, 1999).
- 3.82 Dermot Power's costume design put a great deal of thought into repurposing existing clothing accessories with the simple application of paint and glue (November 12, 1999).

- 3.83 Dermot Power's concept for a nightclub denizen (March 15, 2000).
- 3.84 A number of members of the cast and crew appeared in the nightclub scene as extras. Here, Katie Lucas (left) and Ahmed Best (right) play a couple of patrons. Eagle-eyed viewers can also spot Anthony Daniels in another shot in the scene.
- 3.85 Final frame as Anakin and Obi-Wan enter the nightclub to see if they can flush out the bounty hunter.

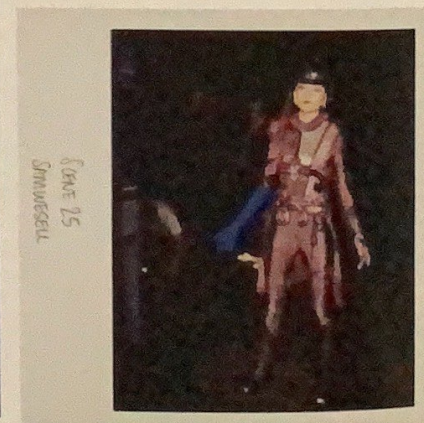


"We follow Wesell into this bar and she attempts to kill me and I cut her arm off. Which is cool as well, because Obi-Wan Kenobi cuts an arm off in the first film. So he's obviously a bit of an arm cutter, isn't he? He likes taking someone's arm off. So I get to mirror that a little bit."

Ewan McGregor



- 3.86 Rehearsing Wesell's death scene. She is shot by Jango Fett from a high building on the opposite side of the street. Once the character actions and camera position are agreed, the actors will dress in full costume and makeup while lights and camera are set up.
- 3.87 Continuity Polaroid of Lecanna Watson for costuming. Obi-Wan cut off Wesell's arm so Watson's right arm is covered in a blue glove so that it can be digitally removed.
- 3.88 Shot information sheet showing Obi-Wan trying to glean information from Wesell as she lies dying. Each shot contains a list of work to be carried out, including Wesell's head morphing back into a Claudie as she dies. Obi-Wan finds the poison dart in CNC 400, which runs for 24 frames.
- 3.89 Having dispatched Wesell before she can reveal who hired her to assassinate the senator, an armored rocket man (later revealed as Jango Fett) takes off from a roof above the entertainment street.
- 3.90 Shot CNC 400, where Obi-Wan holds the dart and looks up to the buildings above.



Shot # CNC350		Frames 65
Shot Type 2D		Animator
Compositor		Rebel
Reel 2.02	Roto	Digimatte
CMM		TD
		Sabre
Description: 35 OBI-WAN, ANAKIN & ZAM		
Ranch Editorial Notes:		
Bid Notes: arm removal Stage elem: dart hole Zam starts morph into Clawditehead		
Status1 Bid Complete		
Sort Order		



Notes:

Shot # CNC370		Frames 157
Shot Type 3D		Animator
Compositor		Rebel
Reel 2.02	Roto	Digimatte
CMM		TD
		Sabre
Description: O/S ZAM		
Ranch Editorial Notes:		
Bid Notes: 3d morphing Zam into clawditehead arm removal, severed arm cg Zam cg clawditehead Stage elem: dart hole 3D element		
Status1 In Progress		
Sort Order		



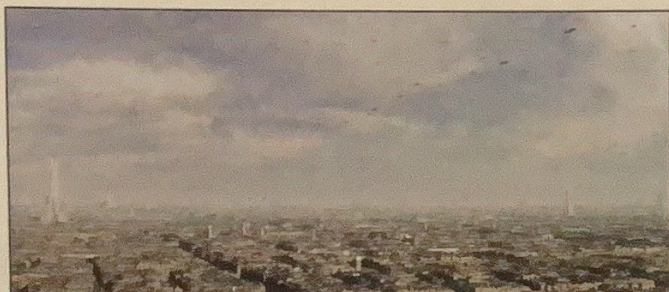
Notes:

Shot # CNC400		Frames 244
Shot Type 2D		Animator
Compositor		Rebel
Reel 2.02	Roto	Digimatte
CMM		TD
		Sabre
Description: OS ZAM		
Ranch Editorial Notes:		
Bid Notes: 400W wipes into JTA replace face with clawditehead work on this shot after CNC370 Stage elem: dart hole BG plate		
Status1 Bid Complete		
Sort Order		



Notes:





Original ILM Matte

E.Tiemens SW2 10-2-01



ILM Matte: Modified Plate to show pockets of sunlight on city surface.

* Note - a bit more 'smog' color near horizon in the afternoon here
If possible keep things less blown out in values on bg. Light pools are the payoff here visually in the frame in an otherwise low key value scheme.

Angle of sun



Lighting can give contrast in distance & warmth to the cooler palette



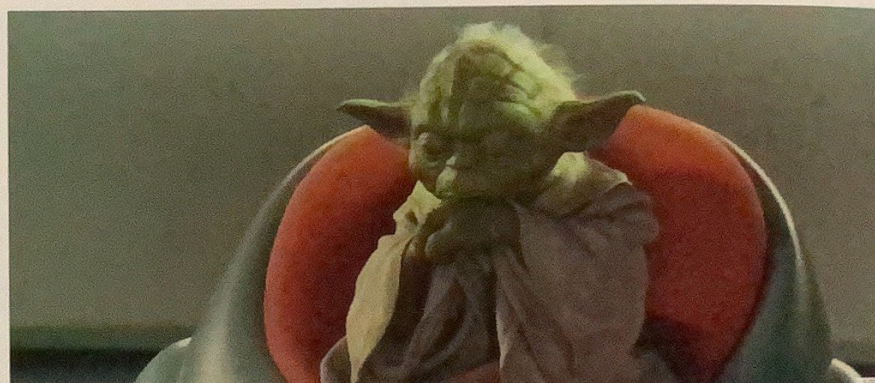
Example of matte comp



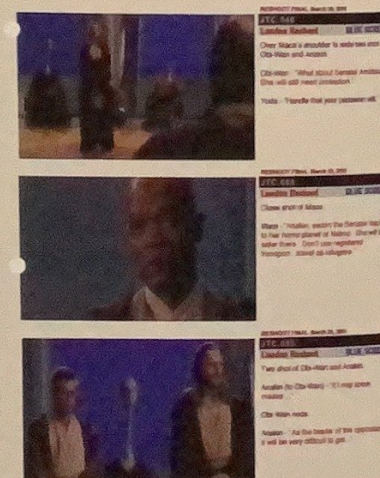
Original ILM



Original ILM



- 3.91 Erik Tiemens's lighting plan for the Jedi Council scene. Having received the images from ILM Tiemens sent notes back specifying the adjustments to be made—e.g., pockets of sunlight on the city surface. CG technology had advanced significantly since *The Phantom Menace* and ILM had the ability to enhance the texture of the light.
- 3.92 Final frame showing a CG Yoda, sitting in the Jedi Council chamber, contemplating recent events.
- 3.93 Shot information sheet (March 29, 2001) for a new scene, shot on April 2, 2001, where the Jedi Council order Anakin to protect Senator Amidala by accompanying her to her home planet of Naboo. Note that images of Obi-Wan and Qui-Gon from *The Phantom Menace* are used as a composition reference for the shots.
- 3.94 A new scene with Anakin and Palpatine. Senator Amidala is not happy about going back to Naboo but Palpatine says he can convince her to leave. The chancellor also notes that Anakin has been given his first solo assignment. Scene 23A was shot on November 2, 2001.
- 3.95-96 Anakin's assignment is discussed in these final frames set in Palpatine's office. This scene immediately follows the Jedi council meeting, and as Palpatine sows the seeds of their future relationship, it underlines how Anakin's loyalties will be divided in the future. Also note that Palpatine's office overlooks the Senate building, seen in the background, a visual motif showing that he has power over the Senate. In contrast, the Jedi Council watches over the whole of Coruscant confirming their perceived role as protectors.



"Anakin's too sure of himself. He is the greatest Jedi ever and he thinks, 'Why do I have to follow anyone's guidance?' It's that confidence that leads to a propulsion to the dark side."

Hayden Christensen

Paul Duncan Exposition.

George Lucas Yeah, I just won't do it.

The Vietnam War and Richard M. Nixon informed the development of *Star Wars*. At one point, Nixon thought he might try to change the constitution so he could run for a third term. That set me off thinking about how a democracy falls, and doing research on all kinds of democracies from Greece to Rome.

Paul Duncan Julius Caesar becoming dictator for life.

George Lucas The elites solved that by killing him, but then they turned around and gave power to Caesar's heir, Augustus, and he did get to be emperor.

In Episode II Darth Sidious/Palpatine creates a war. It's all manufactured. It's not real. "We've got to defend ourselves against the droids and the Separatists. It just so happens that the Kaminoans are building clones, so we should buy the clones." And everybody cheers. This is how freedom dies. With cheers.

Paul Duncan Sidious is a master of presentation. He's manipulating and controlling the news and the information.



George Lucas He does it all behind the scenes, in the shadows. He doesn't come out of the dark until he's sure he's got control of everything. Of course, until then, he uses everybody, like the queen in Episode I, as a front to put forward his agenda.

Paul Duncan Jar Jar proposes giving powers to Palpatine, and Bail Organa is with him surveying the clones at the end of Episode I. Everybody is being used. Everybody's a pawn.

When you were writing, was there any discussion or interaction between you and Rick about the story line, the characters, the meaning, or subtext?

George Lucas No, I never discussed it in that way with Rick, or any of the producers I've worked with. The only thing we discussed was.

Rick McCallum If I didn't understand something.

George Lucas But it was mostly Rick saying, "Do you really have to have a scene with 3,000 banthas stampeding across the desert?"

Rick McCallum (laughs) "Can we do it with 2,500?"

SCENE 25A: INT. PALPATINE'S OFFICE - DAY



POA 011
Palpatine: "I will talk with her. Senator Amidala will not refuse an executive order. I know her well enough to assure you of that."

Anakin: "Thank you 'Your Excellency'." Palpatine: "And so, my young padawan. Say hello to her. Give her all assignments... your padawan has paid off."



POA 022-049

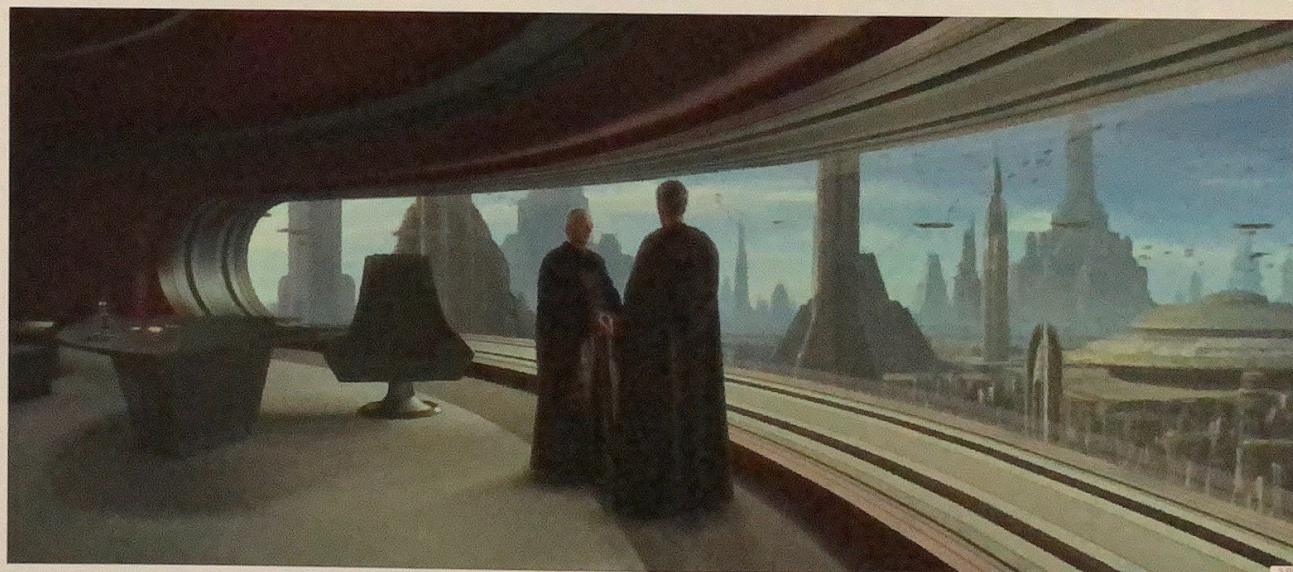
Anakin: "Your guidance... more than my padawan."

Palpatine: "You don't need guidance. Anakin, in that you will learn to trust your feelings. Then you will be invincible. I have said it many times. 'You are the most gifted. And I have loved you. Even more powerful than Master Yoda.'"



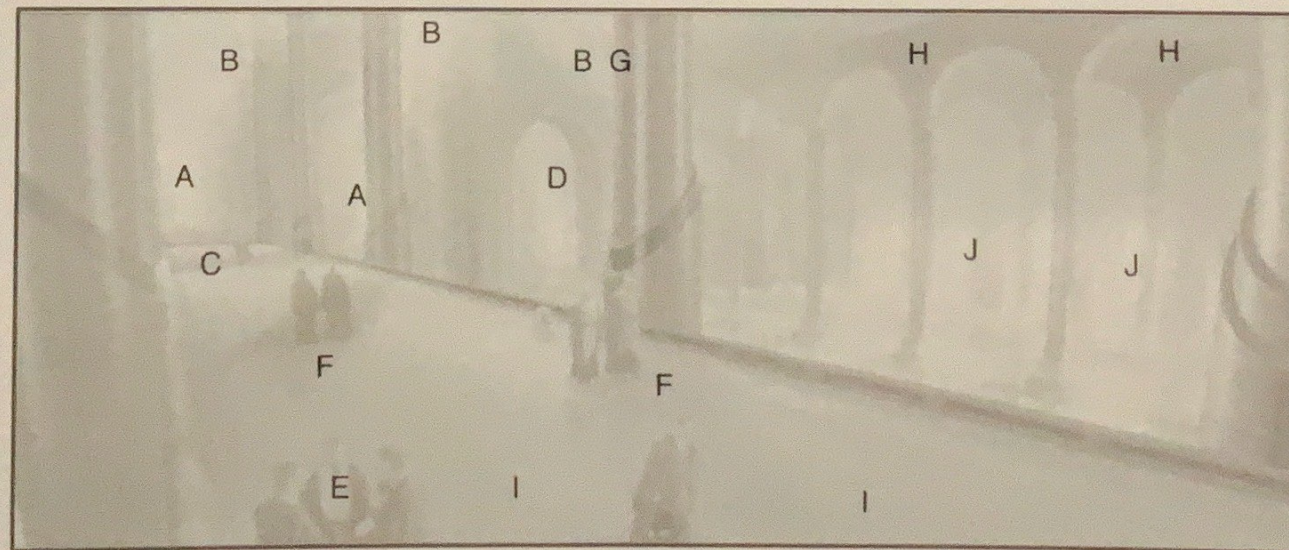
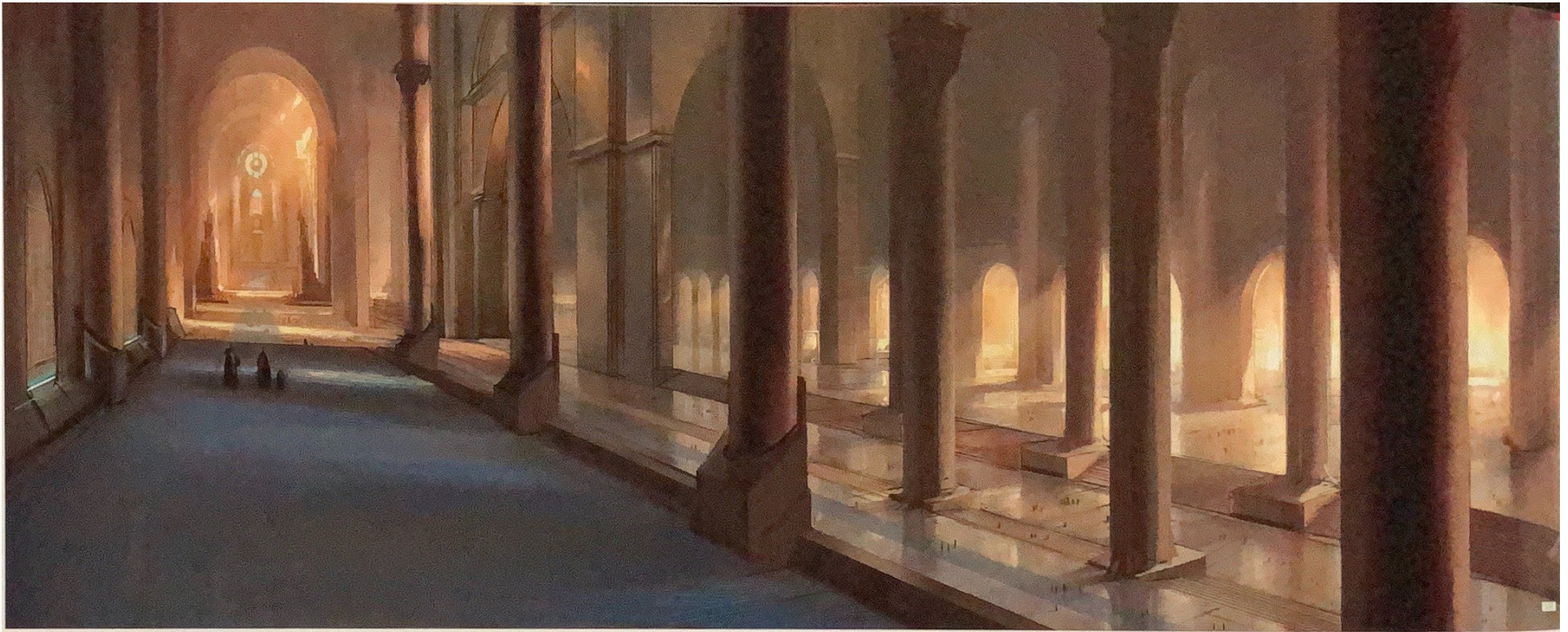
POA 051-059

Dialogue



3/94

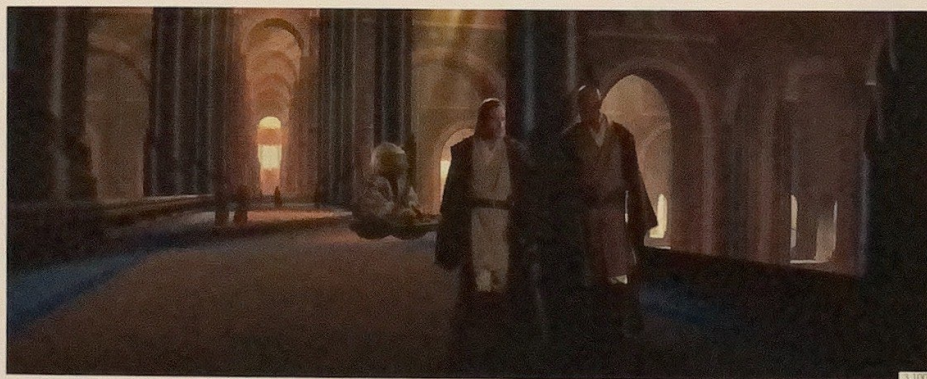
3/95



- A. End of Hallway color dodges more. Warmer Naples yellow on the upper portions, grads too a neutral warm gray violet. The underside of the distant arches get softer and lighter as they set back in perspective.
- B. Rays of light's brightest at the top of frame. Golden color dodges could work well here. Remember this is where the warm sun source is. At the arches on the right we will be going cooler like North light qualities.
- C. A slight addition of haze to get depth.
- D. Very soft light shaft can 'cool' down in color temp.
- E. Foreground actors can have more cool fill with a ND step down effect.
- F. Soften left column shadow and introduce a faint shadow cast on the central column. If we go soft enough here we can still have the actors work in the space.
- G. Warm bounce wrap light with grad going darker as we go down the base of the column.
- H. Darken arches, middle arches slightly lighter. Overall, a ND grad effect at 30 degree angle on the upper right corner can give depth.
- I. A #4 ND grad with a slight cyan/green cast can help neutralize the 'hot' brown carpet/surface.
- J. Color fringing could work here - with a subtle blue cast, and some hotter warm red shifts (lens aberration effect). This is our 'North' light side of the structure.

"George is always putting in what he calls 'ligaments' in the film. He looks at it and says, 'I need something to connect this to this. We'll go back and do that.' He'll call you in and you go back and do some more."

Samuel L. Jackson



The Motion Business

George Lucas Once I had written the script, I had to explain it to people. To explain a scene to someone, something they'd never seen before, never heard of, and didn't have any idea what it is—you're starting in a really deep hole. On any given shot I may have 100 different people working on it. You have to get everybody up to speed very fast. The design of the characters, the design of the props, the location, and how you shoot the movie are all interrelated and everybody's got to understand it and get it without misinterpretation.

My credo is "a picture's worth a thousand words, so let's not talk," which is where storyboards come in. But we're not in the still business; we're in the motion business.

So that's why we have to make animatics, or "previs" as it's called.

Rick McCallum A sequence would take months for George to refine.

George Lucas And at the same time we are designing costumes and sets, generating concept art for the digital matte paintings, as well as regular storyboards—all to feed into the previs.

Daniel Gregoire/Previsualization Supervisor The first scene we worked on was the Coruscant speeder chase.

Doug Chiang Obi-Wan and Anakin chase a bounty hunter through the city, and we go through all the different levels of Coruscant for the first time. In fact, the flying cars originally

developed for the Kaminoans were repurposed to be used as the two speeders for the chase.

Ben Burtt/Editor It started with a one-page summary that George typed up so I had the basic gist of who was there and what was going on.

3.97 *Erik Tiemens's lighting concept for the Jedi Temple main gallery was made after the scene was shot (November 13, 2001). The columns and arches evoke the grandeur of a holy place.*

3.98-99 *Tiemens's lighting notes to ILM for the Jedi Temple main gallery (January 28, 2002). A great deal of attention was given to the color scheme for every part of the frame. As an example, the structure would expect to receive "North" light in the areas marked "J."*

3.100 *Final frame as Yoda, Obi-Wan, and Mace Windu (Samuel L. Jackson) discuss Anakin. Obi-Wan raises doubts about Anakin's readiness to take on an assignment. While not questioning his abilities, Obi-Wan is concerned about his Padawan's arrogance.*

3.101 *This new scene, 25B, was shot on November 5, 2001. It was staged for Yoda, Obi-Wan, and Mace to walk through the hallway, but it was decided at the last minute that Yoda would be transported in a hover chair.*

SCENE 25B - INT. JEDI TEMPLE, MAIN GALLERY

JTM.005

High angle wide shot Mace and Obi-Wan walk with Yoda

Obi-Wan - "I am concerned for my padawan. He is not ready to be given this assignment on his own."

Mace - "The council is confident in its decision Obi-Wan."

Yoda - "Exceptional skills he has."

JTM.010

Mace and Obi-Wan walk with Yoda.

Obi-Wan - "But he still has much to learn, Master. His abilities have made him... well... arrogant."

Yoda - "Yes, yes. A flaw more and more common among Jedi, too sure of themselves, they are. Even the older, more experienced ones."

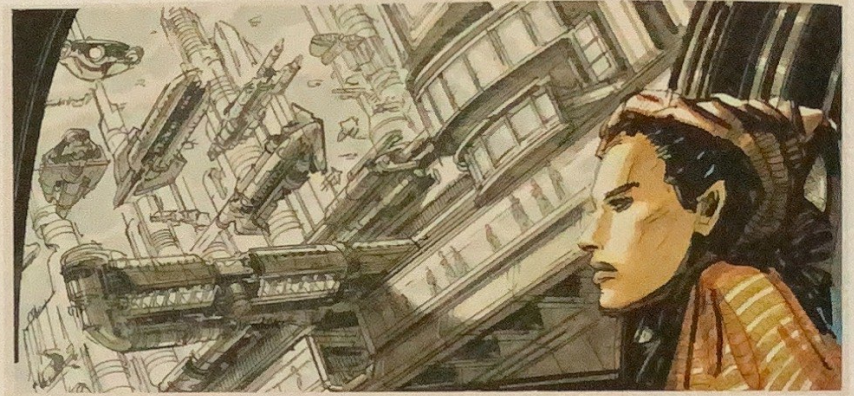
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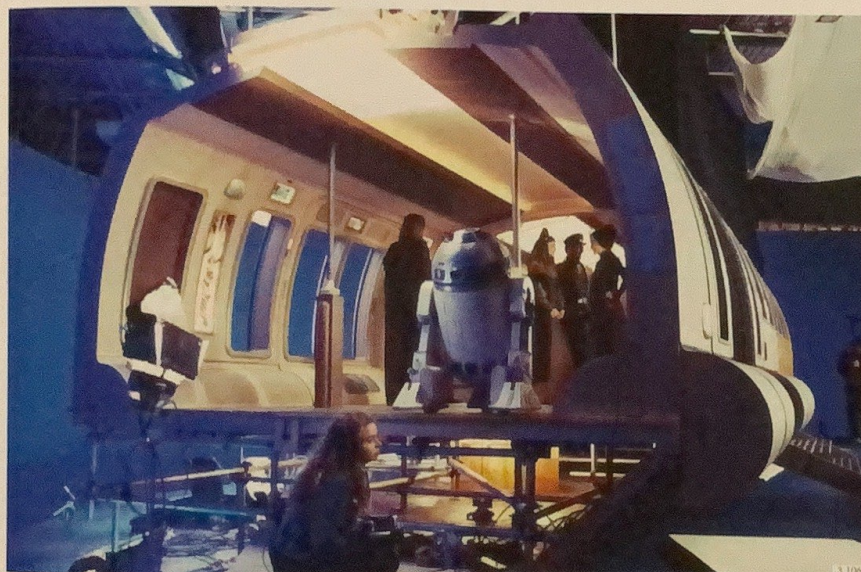
Plate for Yoda dialogue

Mace - "Remember, Obi-Wan, if the prophecy is true, Young Anakin is the only one who can bring the Force back into balance."

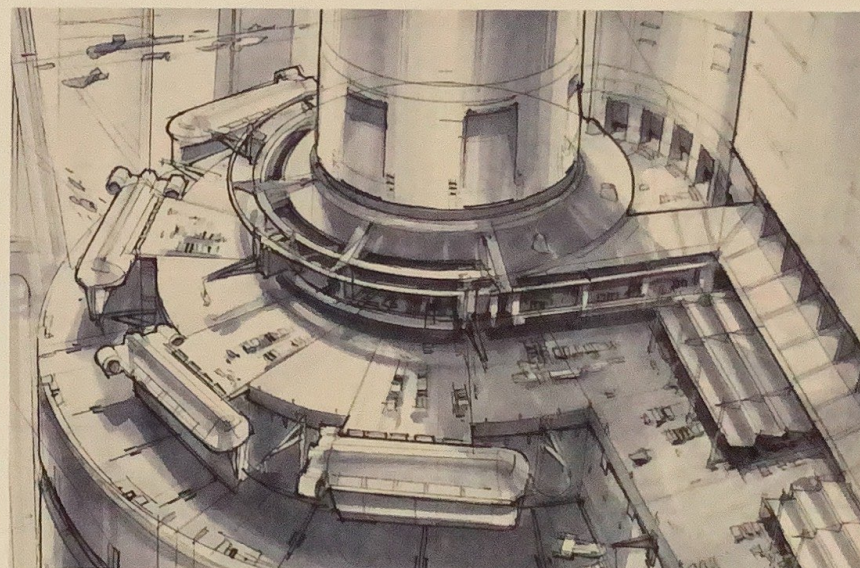
NOTE: George may restage this (less walking)

Don't see
me what
this is
about.

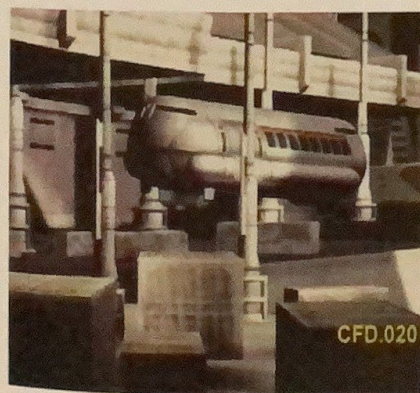




3.106



3.108



3.107

- 3.102 *Dermot Power's costume design for Padmé's incognito journey to Naboo (December 21, 1999). Power notes on the image, "Don't ask me what this is about."*
- 3.103 *Ed Natividad's concept for Padmé's journey on a public transportation vehicle to the spaceport (June 13, 2000).*
- 3.104 *Costume continuity photo of Natalie Portman on set.*
- 3.105 *Filming Padmé leaving Coruscant for Naboo. She and Anakin are wearing clothes more suited to civilian life to disguise their identities.*
- 3.106 *Filming inside the Coruscant bus. A basic set for the interior was constructed.*
- 3.107 *Computer-generated previsualization of shot CFD (Coruscant Freighter Dock) 020 showing the bus arriving at the spaceport.*
- 3.108 *Jay Shuster's concept for the Coruscant spaceport transportation hub (June 16, 2000).*
- 3.109 *Final frame of the spaceport and its enormous freighter ships.*



3.109

"Right now I am the largest owner of blue screen in the world. We have about 4,000 yards of blue screen, enough to wrap it around the studio three or four times. There's nothing we can't cover in blue, and often there is nothing that we don't."

Rick McCallum / Producer



Shot - Analysis Room



3.110

3.110 Marc Gabbana's concept for the Jedi Temple analysis room where Obi-Wan asks droids to examine the dart used to kill Wesell (May 21, 2000). This scene was not in the final cut of the film.

3.111 A floating droid concept by Michael Brunsfeld (December 6, 2000). The right hand is circled indicating a design change to be made.

3.112 Filming Obi-Wan entering Dex's Diner. This shot was not used.

3.113 Shot information sheet for shot CDD (Coruscant Dex's Diner) 010, the exterior of Dex's Diner that runs 226 frames. It shows all the information about the camera positioning and movement, specifying lens type, camera height, tilt, distance to the left and right windows, angle, how high the stairs are, and the shadow key at the door. Each department used this information when generating visual elements for the shot. This ensured that when the model shot was composited with all the other elements they lined up perfectly.

3.114 The model shot of the exterior of Dex's Diner and the surrounding environs. The backing is green screen to allow the Coruscant cityscape to be added later as a digital matte.

3.115 The Coruscant cityscape was created digitally.

3.116 CG models of the vehicles and steam elements on the street outside the diner are combined with live action of Obi-Wan and others walking on the street. CG trains were also added to crisscross in front of the camera.

3.117 A blue cloth laid in an outdoor space, called "the slab," was used to shoot exterior figures and crowds for multiple sequences in the film. When shooting on the slab, the sun's projected position and luminance for the day was used so that the camera would be at the correct angle at the correct time to achieve the required lighting and shadows. This was essential to accurately composite the digital elements during postproduction.

3.118 Model maker Kevin Wallace (doubling as Obi-Wan Kenobi) walks from a blue pavement up some blue steps into Dex's Diner.

3.119 The final shot of Dex's Diner with all the elements composited together.

George Lucas To start the process we would take images—an object moving across the screen, up, down, going away from us—that would show you the motion of what was happening, and intercut that with the pilots. We didn't have pilots and people yet, so Ben and his assistant editors would go out to in a little barn with a blue screen to shoot various characters flying around in the cars.

Ben Burtt We used George's Ferrari for the speeder. I think we put a few scratches on the roof.

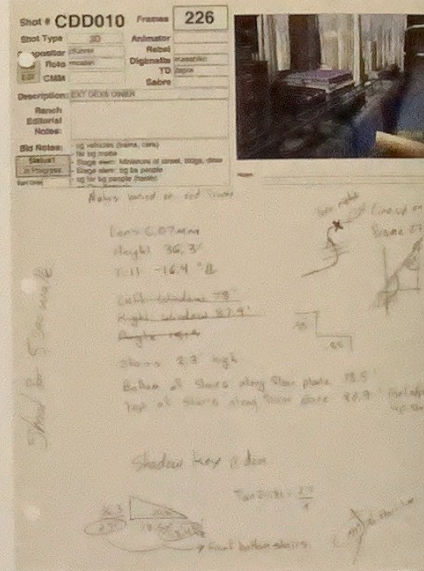
Rick McCallum Then Ben cuts it together and shows it to George. George makes his changes. George takes it and bends it and molds it.

Daniel Gregoire Once Ben was done with his videomatics we were able to bring that into the digital realm. The previz team, using Alias Maya on Windows PCs, was able to do more complex animation. With Maya's advanced feature set, which included strong character animation, dynamic simulations, and many other complex digital tools, we built the CG versions of the speeders, and the characters, and flew them digitally through the city. We removed the need to shoot extras on camera. Adobe's After Effects on the Macintosh was still the foundation of compositing the final previzualization shots that were often combinations of digital elements, photo images, character stand-ins, and reference footage.

George Lucas And then we take that and we blow it up, move it around, cut it out, change it around, and give it back to the animatic department and they would make a finer representation of that until we got the shots the way we wanted them.



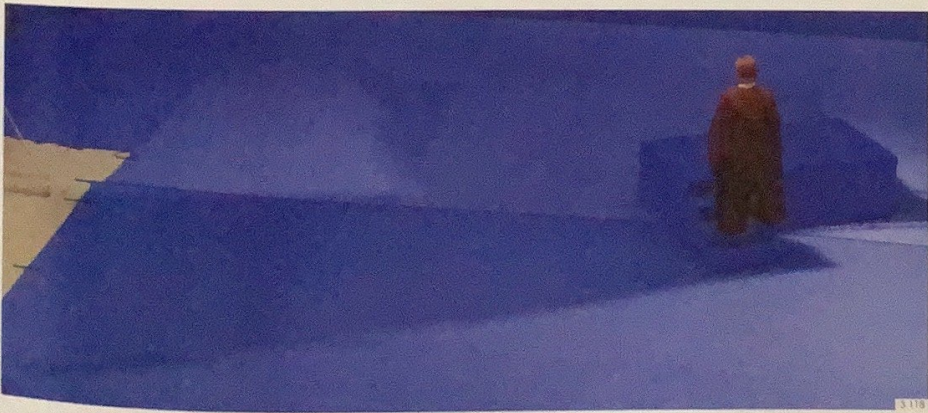
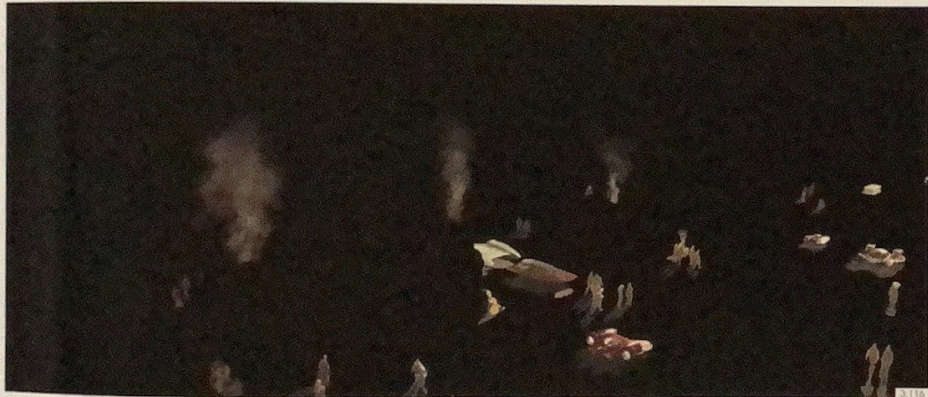
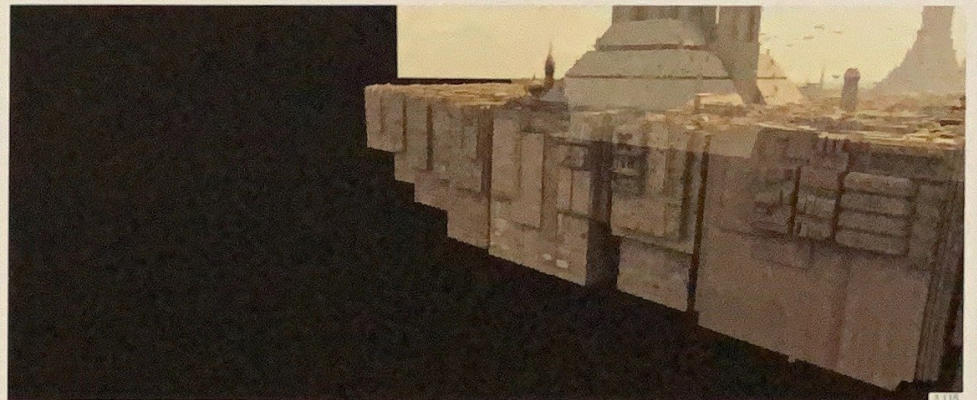
3.112



3.113

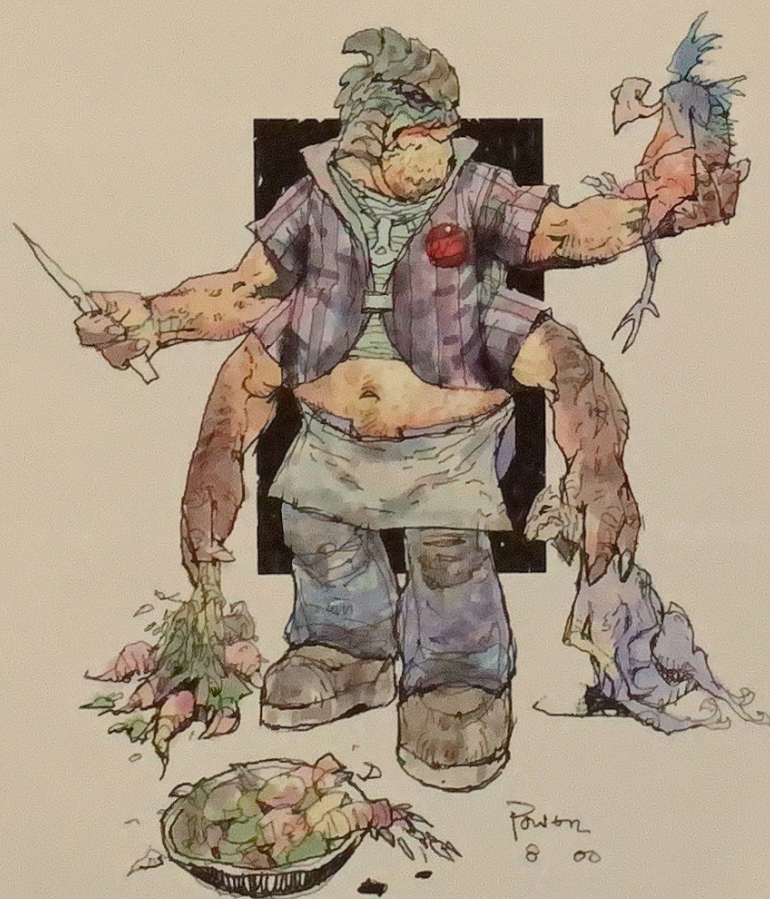
Daniel Gregoire This worked out so well that it marked the last time a video camera would be used in the preproduction of the film.

For the next scenes we worked on, the Obi-Wan vs. Jango Fett rain battle and the asteroid chase, we went 100 percent digital. The Obi-Wan/Jango rain battle posed a particular challenge in that it was an all-out brawl and fistfight. This would take a lot of complex character animation to pull off. We simply didn't have the time to animate characters thoroughly enough to convey the fight. At this point, previzualization supervisor David Dozoretz decided to use ILM and its motion capture facilities to form the basis of the fight. In one day we captured what we thought would be a really good base for the sequence. Using that data in Maya we were able to pull off a first version of the sequence that was very believable and was closely followed on set during shooting. However, this marked the last time we would use motion capture on a sequence. Overall it produced good results but it was a technological challenge that at the time took more time than it was ultimately worth.



"We've learned through the years that no matter how strange a character is audiences have to be able to connect to a face of some kind. So Dex had two eyes, a nose, and a wide mouth. We also gave him a bum leg so that he would walk with a limp, just to add some character to his movement."

Rob Coleman / Animation Director



dp472b dexter 5-col

Rick McCallum The previs has huge economic impact. If you're reading a script and there's a scene that takes place on a street, the production designer, costumes, and set decorators are going to want to protect themselves by buying lots of extra pieces of set and costumes and props so that if the director asks for anything at the last moment — "Gee, it'd be great if to have another wall over here" — they have it to hand. That costs a fortune. But if you have an animatic then you only need to build the part of the street shown in the shot, not the whole length of it.

George Lucas I could play the previs for the cast and crew on the set, whether the set is blue screen, green screen, partially or fully built.

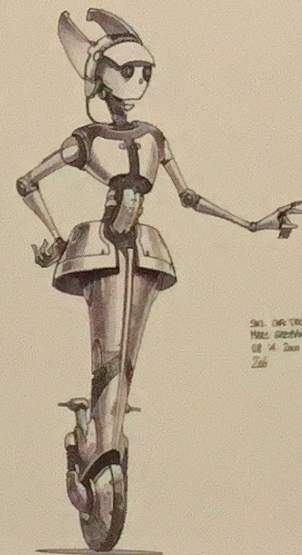
Rick McCallum You could then block and shoot the sequence quickly because it would all have been worked out.

George Lucas Likewise, I could show the previs to ILM: "This is the shot; this is the way it fits into the movie." There's no other way to do that. It's too complex. Writing millions of words, or thousands of storyboards just does not express what you really want to say.

Eventually we came to rely on that department to define how the movie would go together.

The Quality of the Cloth

Paul Duncan We begin with Padmé's ship descending into a fog on Coruscant. You're telling us that we're delving into a murky





3.123

world, the world of politics, and you're expressing it visually. In comparison, Episode I seems to be dry and without weather.

George Lucas That's simply because weather is hard to shoot. We were winging it with the technology on Episode I and we couldn't do expensive stuff like weather.

Paul Duncan There's almost a film noir aspect in the first half of the movie, with Obi-Wan acting like a private eye.

George Lucas The movie is constructed as a mystery. Which is, who's behind all this? Obi-Wan traces the bounty hunter's dart back to Kamino, then discovers the clones, that Sifo-Dyas ordered the clones... What's going on here?

Paul Duncan We get fog, clouds, and twilight on Coruscant, water, rain, and storms on Kamino. The palette is becoming more complex.

George Lucas It's getting progressively darker because we know where we're headed: the rise of the Empire, and the main event, the showdown between Anakin and Obi-Wan.

3.120 *Dermot Power's concept for Dexter Jettster (August 11, 2000).*

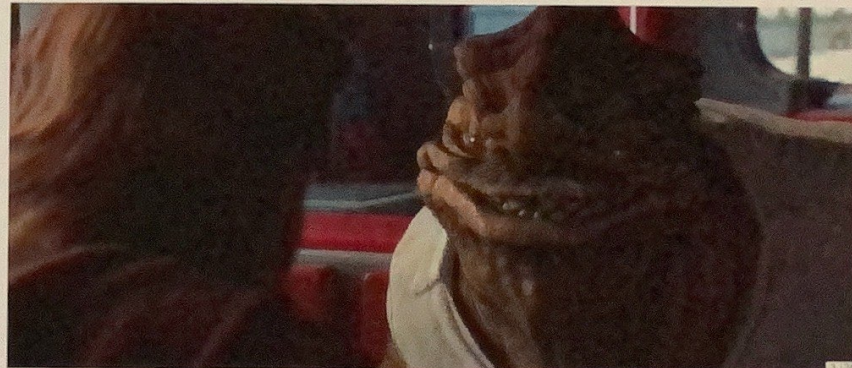
3.121 *Kurt Kaufman's design for the diner, populated with a variety of customers (May 4, 2000). Production designer Gavin Bocquet: "George understands how important it is to give people something to relate to in these bizarre environments. So even though we were on Coruscant, we had a diner that looked like a diner as we know it. It would have looked perfectly in place in downtown Los Angeles—but put a few aliens and droid waitresses in it, and you're on Coruscant."*

3.122 *Marc Gubbana's idea for a waitress droid, which became the character FLO (August 14, 2000).*

3.123 *Ewan McGregor playing opposite Ron Falk, the voice actor for Dexter Jettster. Although Falk would be replaced by the CG Dexter in postproduction, Lucas found performances were enhanced if the actors could interact with each other face to face; rehearsing could lead to discoveries about the rhythm of the sequence. In further takes, McGregor played the scene on his own.*

3.124 *Final frame of Obi-Wan requesting help from Dexter as he tries to solve the mystery surrounding the poison dart. Dexter says it is a Kamino subterfuge.*

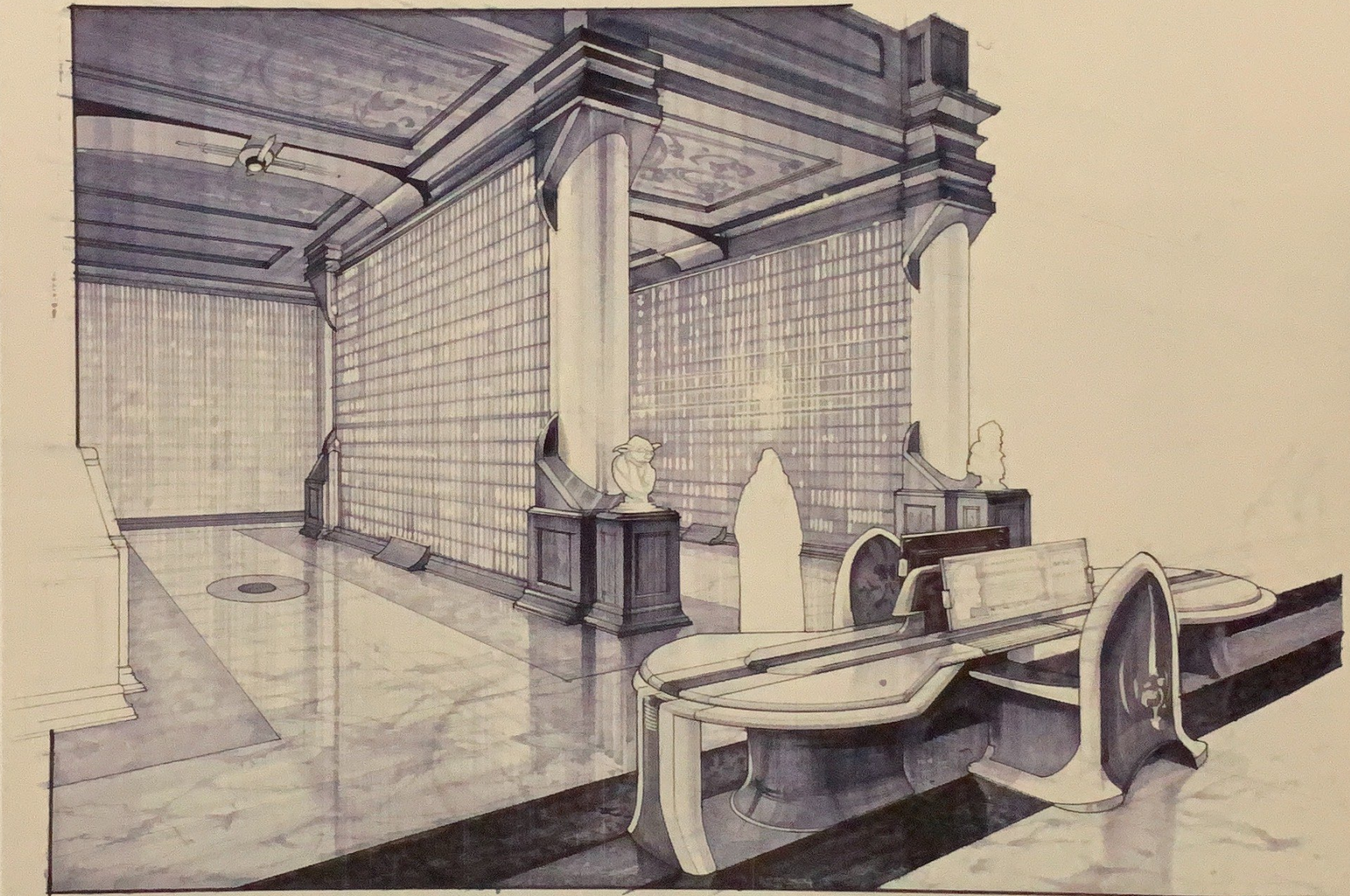
3.125 *George Lucas and Ewan McGregor pose in homage to a photo taken of Lucas and Ron Howard at Mel's Diner during filming of American Graffiti (1973).*



3.124



3.125



ARTIST: JAMES MANN
JEDI ARCHIVE DETAIL
3-2-2000
CNSK

"In the end, I think [Count Dooku] left because he lost faith in the Republic. He believed that politics were corrupt, and he felt the Jedi betrayed themselves by serving the politicians."

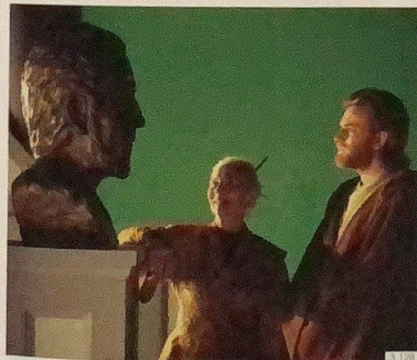
Madame Jocasta Nu



3.127

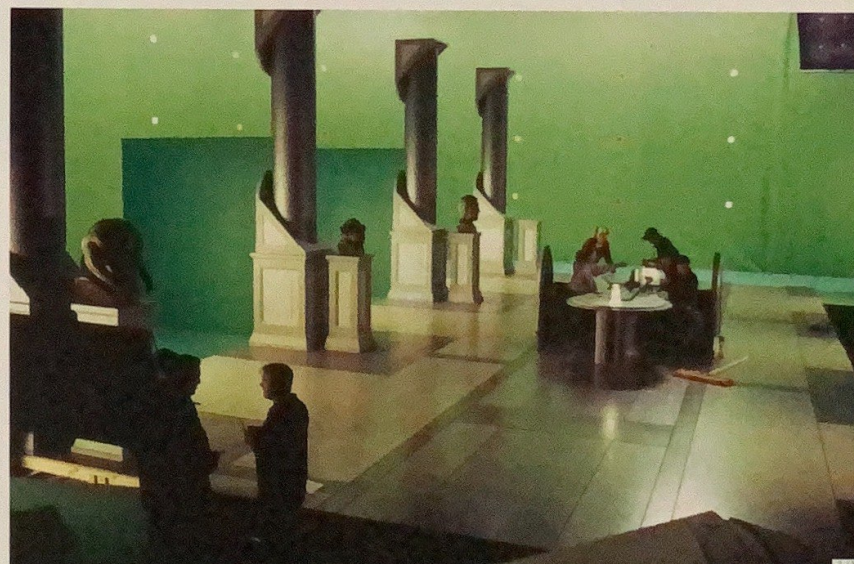


3.128



3.129

- 3.126 Kurt Kaufman's concept for the Jedi Archive includes a statue of Yoda in the center (March 21, 2000).
- 3.127 Model maker Jesse Thomas working on the detailed miniature model of the Jedi Temple Library on H.M.'s Windward Stage. It was 12 feet long and five bays deep.
- 3.128 Obi-Wan consults with Jedi archivist Madame Jocasta Nu (Athea McGrath) and the conversation turns to the bust of Count Dooku, the most recent of the "Lost Twenty"—Jedi who left the Order. Originally Nu gave more information about Dooku's background but the dialogue was not used in the final cut.
- 3.129 Final frame showing Obi-Wan searching the archives to locate the planet Kamino as advised by Dexter. The miniature was filmed in multiple passes to make a depth of 10 bays and two floors. Richard Miller carved some of the miniature busts in the likeness of crew, like Rob Coleman, Pablo Helman, John Knoll, and George Lucas.
- 3.130 Preparing the minimal archive set, which comprised the flooring, the desk, and some of the busts of the "Lost Twenty" in front of the columns.

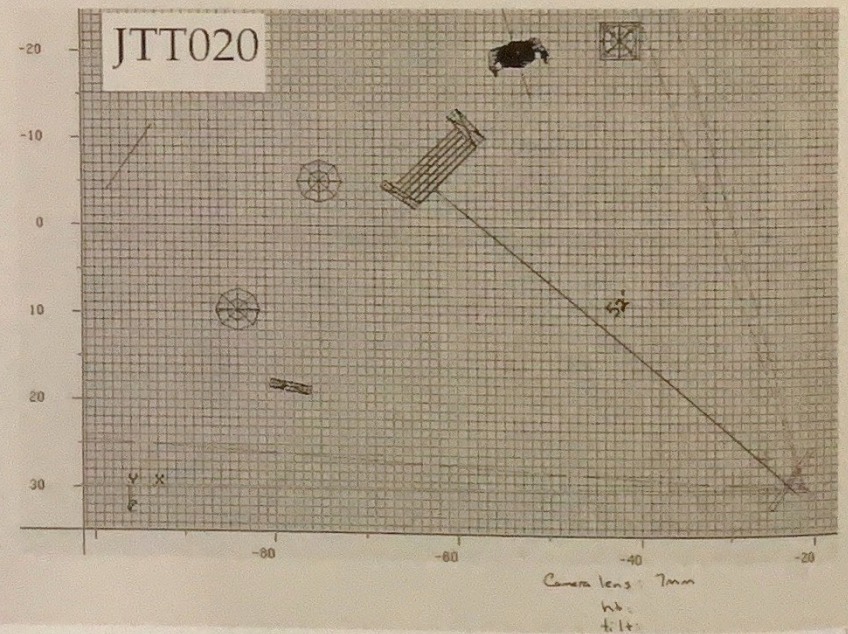


3.130



Benton Jew
Jedi Statue
Episode 2
4/10/2001

APPROVED
4.10.01 GJK



“The young actors were very good. They all stood on their spots, didn’t move about. Ahmed Best helped them to keep in line, and he was just fantastic with them.”

Ewan McGregor

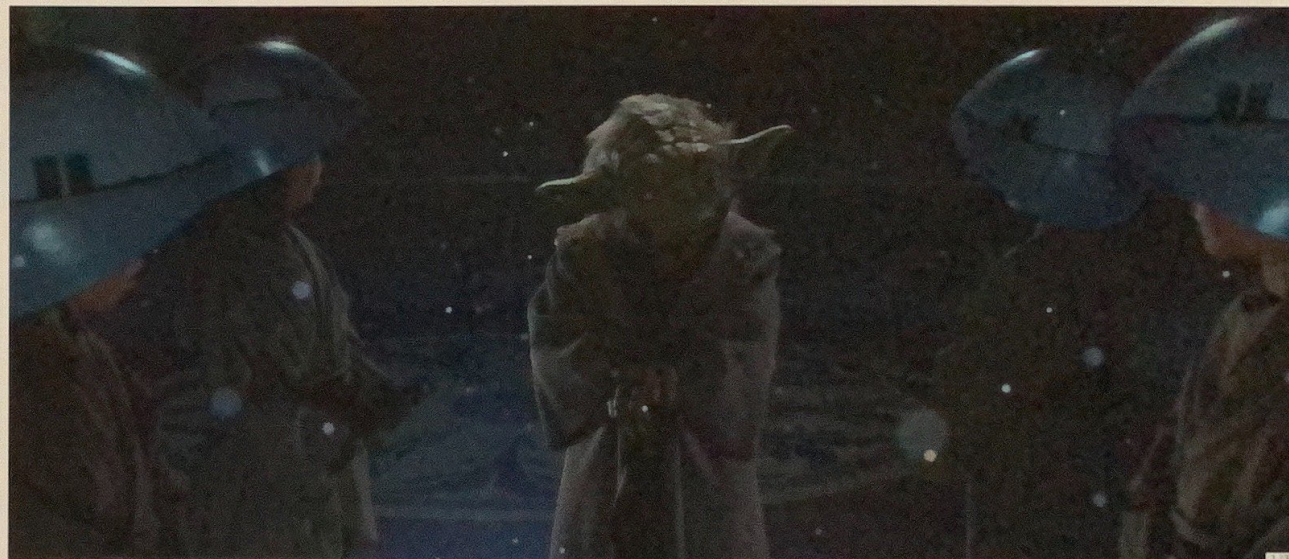
3.131 Benion Jew's concept for the Jedi Statue (April 10, 2001). It was approved for use the same day and was then sculpted in miniature by Richard Miller. It was part of the Jedi Temple hallway model that Obi-Wan walks through to get to the youngling training room and to consult with Yoda.

3.132 Precue visualization of shot JTT (Jedi Temple Training) 020, the hallway that Obi-Wan walks through. CG figures are placed in the scene—some dressed in business suits—to represent where they would be walking through the hall. In this image Obi-Wan walks from left to right, but in the final scene the image was flopped so he moves from right to left.

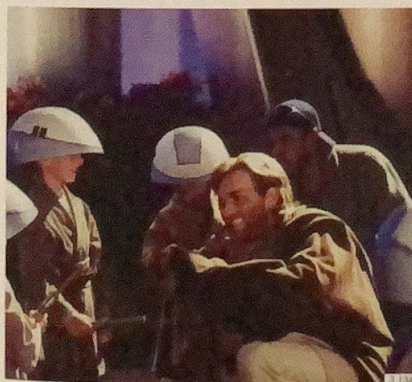
3.133 This computer plan of the hallway shows the camera position and direction in relation to the stairway and statue. This was used as a guide so that the Jedi descending the stairs and walking around could be filmed against blue screen.

3.134 Ewan McGregor entertains the young Padawans before the take. More than 20 children were cast with many being identical twins. Since filming with children is restricted to four hours, after that time they could continue shooting with their twins. Ahmed Best can be seen in the background—he was the life and soul of the party on set.

3.135–136 Final frames showing Yoda consulting the younglings about Obi-Wan's conundrum—Master Kenobi has lost a planet. One of the younglings suggests that the planet existed, but somebody had deleted it from the Jedi archives.



3.130



3.134

Episode I is bright and sunny with a little kid, and as we go down the road it's black and red with everybody dying. There are fewer jokes.

Paul Duncan In terms of color-coding, through the story Anakin and Padmé both have organic colors, with Padmé leaning to lighter shades, and Anakin darker. But after the death of Anakin's mother on Tatooine, Padmé wears white in stark contrast to Anakin. This is all completely planned.

George Lucas Yes. Costumes are very big for me. I think I told you before about the Rebels being earth colors, and the Empire being black and white in the first trilogy.

It wasn't as consistent for this trilogy because we were going to so many different places. In the wilderness you can restrict the palette, and reserve red for the Emperor, but Coruscant throws off all that planning—there's red in Coruscant and you're going to have to deal with it.

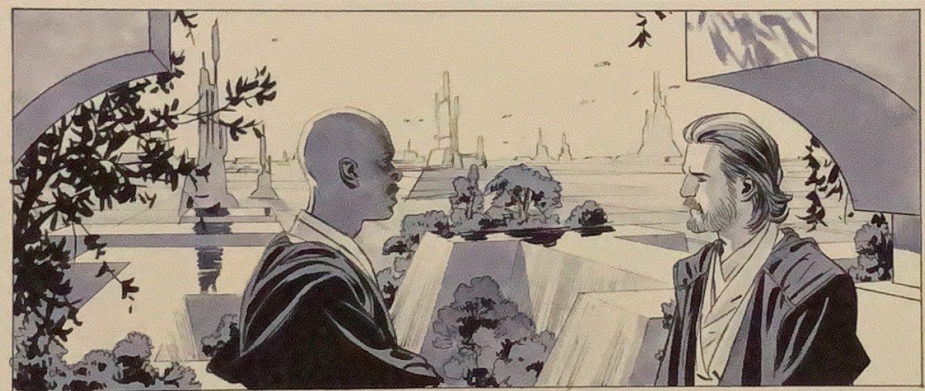
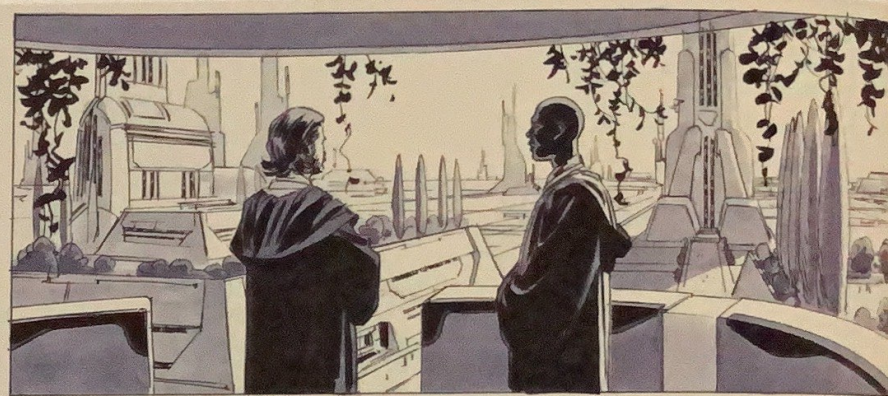
When we were doing the conceptual stuff we had to figure out the harder stuff, which is, "That looks great on a piece of



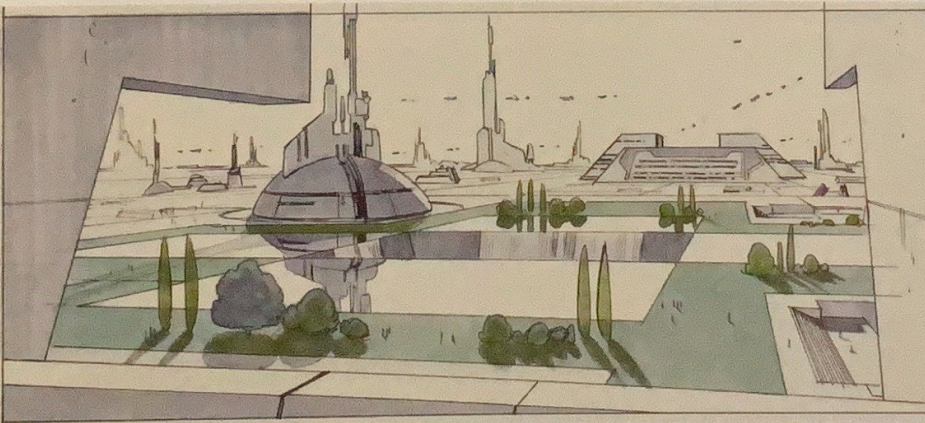
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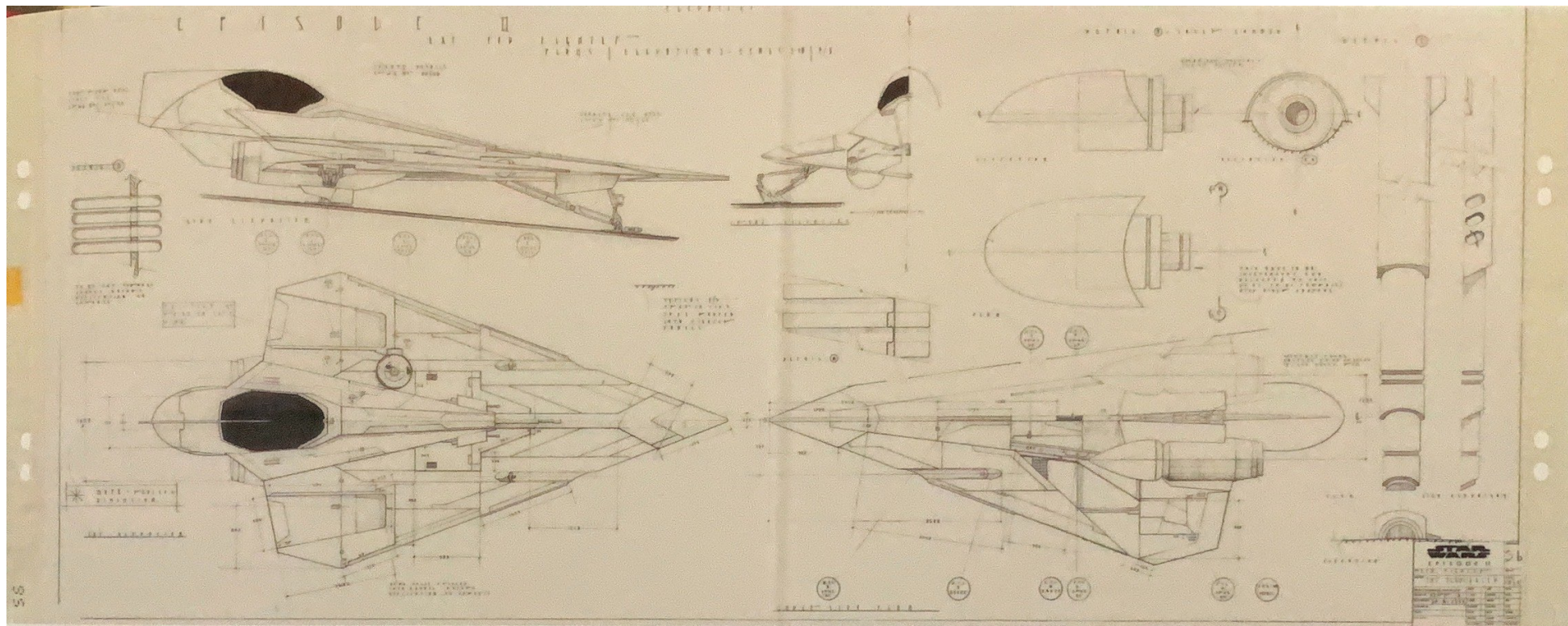
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3.141

- 3.137-141 Rodolfo Damaggio's environment designs for a scene between Mace and Obi-Wan that is not in the film.
- 3.142 Mark Bartholomew completed the hand-drawn blueprint for the Jedi starfighter on March 28, 2000. Doug Chiang: "George will typically pick up a pencil or pen and add his modifications to the designs or say, 'Let's take the cockpit of this drawing here and put it on here.' When I initially designed the ship into a single fighter there was not any logical place to put an R2 unit."
- 3.143 Concept for the deleted Jedi landing bay scene as Obi-Wan and Mace walk out to the landing platform.
- 3.144 Photo from scene 51 as Obi-Wan sets off for Kamino. He expresses concern about his Padawan, but Mace notes

Anakin's exceptional abilities and indicates that if the prophecy is true he may be the one to bring balance to the Force. This scene was deleted from the film but some of the sentiments about Anakin were resurrected in the new scene where Obi-Wan, Mace, and Yoda discuss Obi-Wan's concerns at the Jedi Temple. Significantly, the one line that did not transfer to the replacement scene is when Obi-Wan says that Anakin will not be able to protect the senator because "He has... an emotional connection with her. It's been there since he was a boy. Now he's confused... distracted." It means, of course, that Anakin is in love. The final cut does not depict Obi-Wan leaving Coruscant but cuts to his starfighter in space, arriving at Kamino.





E.
TIEMENS
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Iain McCaig / Concept Artist We wanted costumes that looked like they'd fall off if she sneezed. It was about peeking at things, about intimacy.

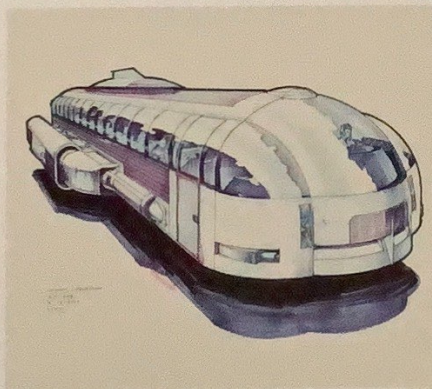
Dermot Power / Concept Artist The culture we live in provides us with a certain index of shapes that gets exhausted very quickly, so our designs become repetitive. So I look at other cultures from around the world and societies through history to pool their shapes. It's a good way of getting other sensibilities into your design.

Trisha Biggar I went to the Natural History Museum and looked at the hues of coral and shiny beetles. I also looked at original photographs from Japan, Korea, Russia, Africa, Turkey, and even North American Eskimos from the 19th century. George likes to take an idea and give it a twist; this gives me free rein to gain inspiration from just about everywhere.

George Lucas The costume design is very complex, much more than on *American Graffiti*, for example. For that movie we just gave them a T-shirt or a shirt—one wardrobe through the whole movie—and that's it.

A Texture of Reality

Doug Chiang George constantly revised the script throughout preproduction but by January 2000 there was a first draft so the design department's focus shifted to the sets. Gavin Bocquet would need to build for George to shoot by June.



paper, but what's behind it? Turn her around." Or, "She's going to have to jump through a hoop and have a fight so she can't have a dress like this." So the design was not just the color or how it looked, but costume designer Trisha Biggar and I were worried about and focused on how this would play in real life. What were the actions that Natalie had to go through in that wardrobe and how did that fit? She had to assess the quality of the cloth, and how it moved. Is it going to be stiff or blow in the wind?

And there's a whole bunch of things that aren't in design that have to be in the wardrobe. Costumes develop character, so each costume has to be designed to tell you what their function is and who they are.

Trisha Biggar / Costume Designer As George progressed with the script he realized more that he wanted to show a softer, friendlier side to Padmé, where she could be looking sexy and gorgeous and young, in skimpy clothes.

Natalie Portman I'm allowed to show tummy now, I guess.

George Lucas Padmé's costumes are sultrier in nature this time.



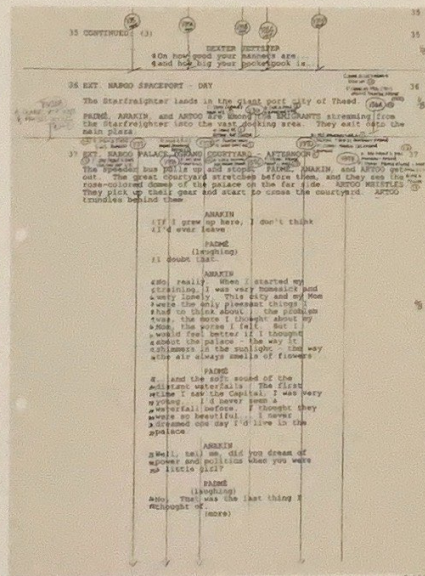


3.145 Erik Tiemens's concept for the Naboo spaceport as Anakin and Padmé arrive in the freighter (July 23, 2001). The idyllic Naboo countryside contrasts with the mechanical, impersonal cityscapes of Coruscant

3.146 Final frame of the Theed palace grand courtyard

3.147 Kurt Kaufman's concept for the air bus that transports Anakin and Padmé to the Theed palace (April 15, 2000)

3.148 Final frame as Padmé and Anakin, accompanied by R2-D2, walk through the palace passageway to meet with Queen Jamillia and brief her on the current situation. This was shot at Plaza de España, Seville, Spain, on September 13, 2000.



3.149 Director of Photography David Tattersall checks the light levels prior to shooting Aysha Dooker, who plays Queen Jamillia. This scene was filmed at the Royal Palace of Caserta in Italy on September 5, 2000.

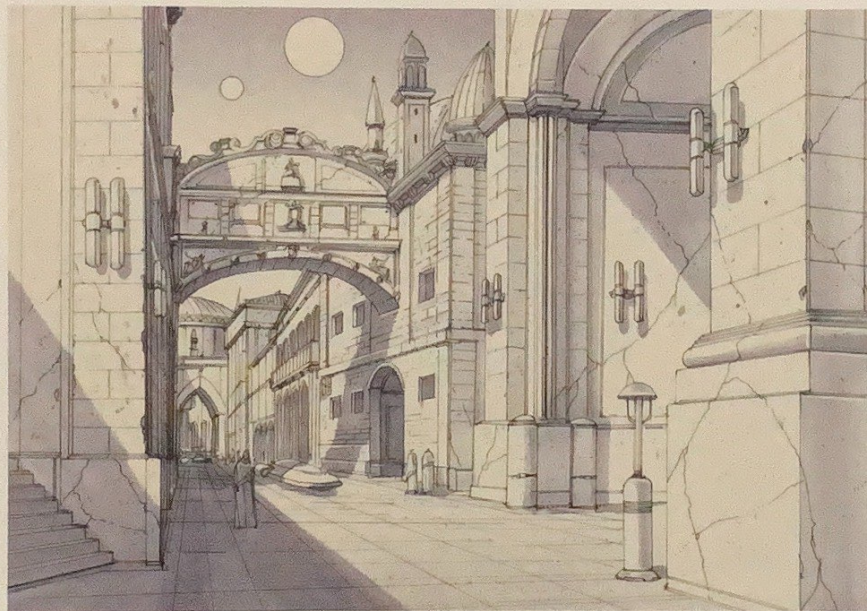
3.150 Lined script for the scene when Anakin and Padmé make their way to the palace. Anakin recalls memories of his time on Naboo before he commenced his Jedi training and Padmé tells him about her serving as the youngest elected queen.

3.151 Iain McCaig's costume design for Queen Jamillia stamped "OK" and "Fabulous" by George Lucas (January 6, 2000).



"I really liked that scene, and it went a long way to establishing what Padmé's problems were: she was avoiding getting married; she didn't have to be in public service; that Anakin cared about her; that she was in denial, she liked him but she wasn't going to talk about it...then I got very hard-nosed about the length of the film and deleted it."

George Lucas



3.152 Doug Chiang's concept for a residential area of Theed was intended for *The Phantom Menace* but became the street of Padmé's family home (April 3, 1997).

3.153 The sequence where Anakin is introduced to Padmé's family was filmed but deleted. Padmé's nieces meet Anakin but are far more enamored of R2-D2.

3.154 Lucas directing the children who play Padmé's nieces, Ryoo (Keira Wingate) and Pooja (Hayley Mooy).

3.155 Lucas directs Portman. This is the first scene where we see Padmé outside of her official duties and relaxing with her family. This scene gives a taste of what Anakin has always yearned for: a family life. It also highlights Padmé's sense of duty because although she has a loving family she still dedicates herself to others. Anakin can see for the first time what was missing in his life.

3.156 Concept for the interior of Padmé's parents' dining room. This is a photograph of the set but the image has been manipulated to include a holographic picture on the far wall.

3.157 Discussing the scene set in Padmé's parents' house, Padmé's sister Solu tells Anakin, "You're the first boyfriend my sister's ever brought home."

3.158 Exterior of Padmé's parents' garden. Ruwee (Graeme Blundell) asks Anakin how much danger his daughter is in. This scene was filmed in Italy at Villa del Balbianello, Lake Como, on September 1, 2000.

Gavin Bocquet George told us that Episode II was going to be a much smaller, more intimate film than Episode I, with, presumably, fewer sets. It didn't turn out that way.

Doug Chiang It's the same relationship that we had on Episode I, which is essentially we work with George to get everything designed, and then once the designs are approved I hand it over to Gavin who builds set models and figures out what needs to be constructed, and what materials to build them out of. Sometimes he or I enhance the designs again because of stage space or budgets, and present them again to George. It's a fluid exchange of information. This is becoming more of a virtual shoot than the first one, since a lot of the actual sets will be built after the principal photography as miniatures or as digital sets.

Gavin Bocquet By talking to John Knoll at ILM, and George, and Rick, and Doug, we can come to some conclusion about





the best way to get a particular scene. For a one-shot or two-shot scene it's probably more cost-effective for ILM to make it than for us to physically build it. Once you start having 10, 20, 30 shots on a set, then it becomes much more expensive for ILM to construct what we could construct for real. In fact, the more that we build the better, since it added a texture of reality to the backgrounds, but obviously there are limits to the size that we can build.

Chitchat

Lynne Hale / Press Release / February 11, 2000

George is still working on the script for Episode II so at the moment Robin Gurland is only casting Anakin. Thus far, Robin has seen 700 tapes and submissions, and met with 300 candidates. She does not have a short list yet



and is still exploring many possibilities. I know there have been many reports of actors saying that they have met with George Lucas and have done readings for him, or are the number one choice for Anakin. These are false rumors (but fun to read!). Regarding other characters, Robin will not begin to cast other parts until she gets a character breakdown from George.

Robin Gurland There were no auditions; everything was done by meetings. It was basically sitting down for 20 minutes to two hours and finding out who they are as an actor and what experience they have.

Hayden Christensen had two of the characteristics that I was really seeking for the character of Anakin: he has the vulnerability, and he has the edginess that's needed. We had to have that combination, and it's rare to find an actor who can go back and forth so well. There is something so interesting going on behind

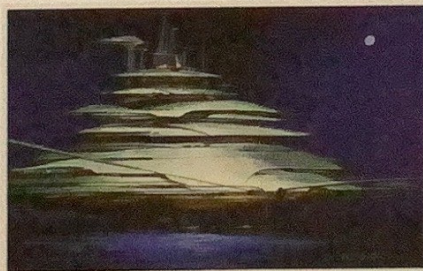


“George described Kamino as a planet consumed by storms but with very hi-tech, sophisticated cities built on stilts. That image was very appealing, since I’ve always liked the striking image of oil derricks in the North Atlantic. When I was painting, I was trying to capture that mood where there’s a break in the weather and a shaft of sunlight is highlighting the city, but the rain and winds are still powerful.”

Doug Chiang

3.159 Doug Chiang concept art for Tipoca City on Kamino, a structure designed to withstand the forces of the oceans and frequent storms (September 13, 1999).

3.160 Doug Chiang’s concept shows Jango Fett’s Slave I starship approaching Tipoca City’s landing platform (March 30, 2000).



3.159



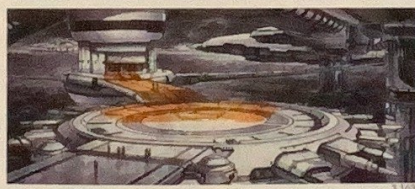
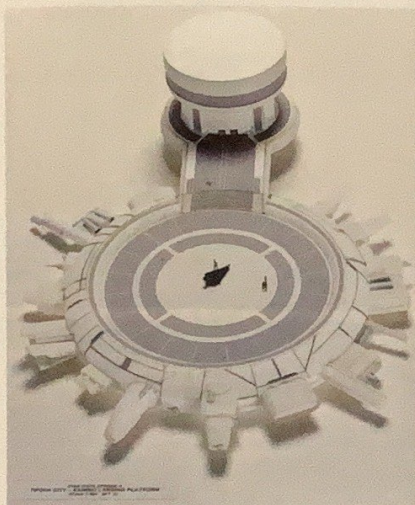
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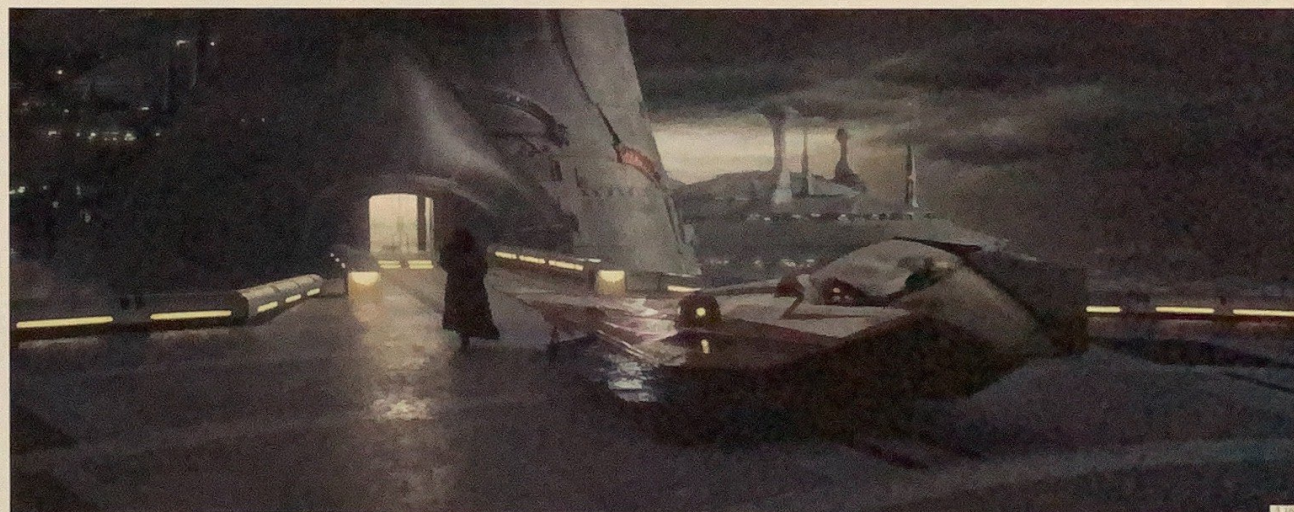
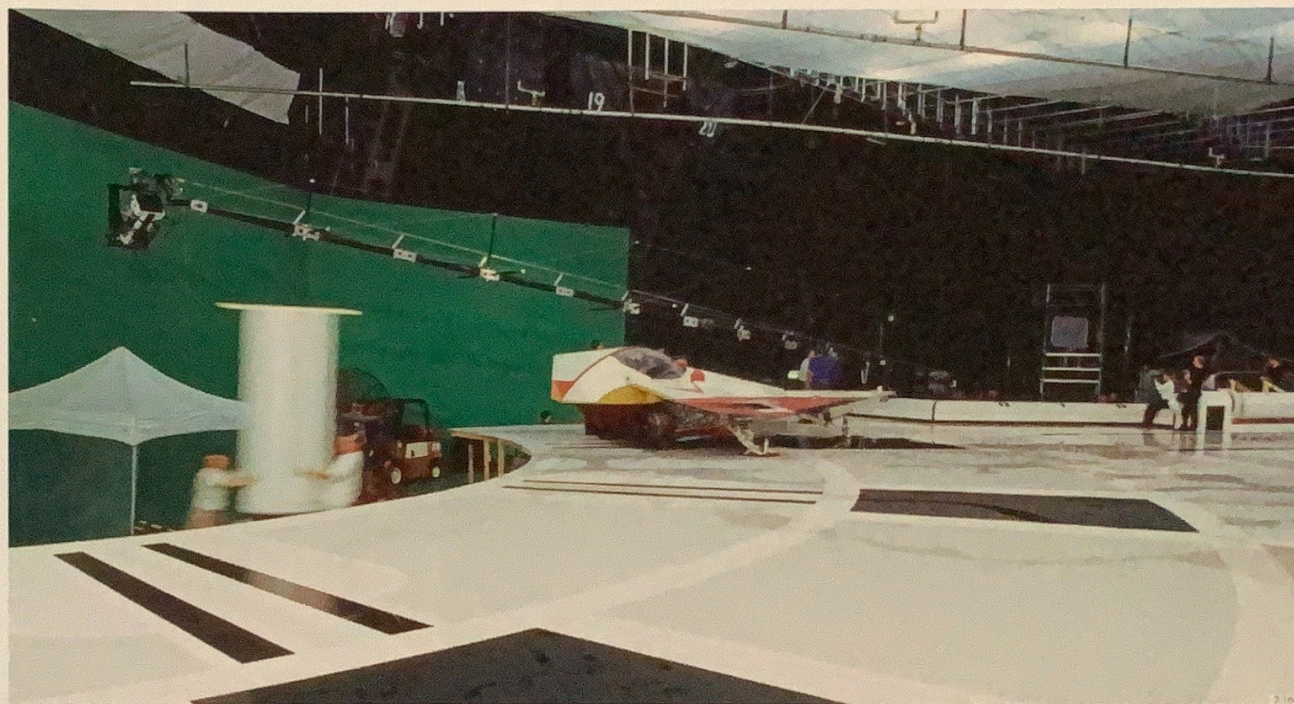


***“I emphasized the space,
to give a sense of danger.
Like Doug Chiang told
me, ‘There are no hand-
rails in the Star Wars
universe.’”***

Marc Gabbana

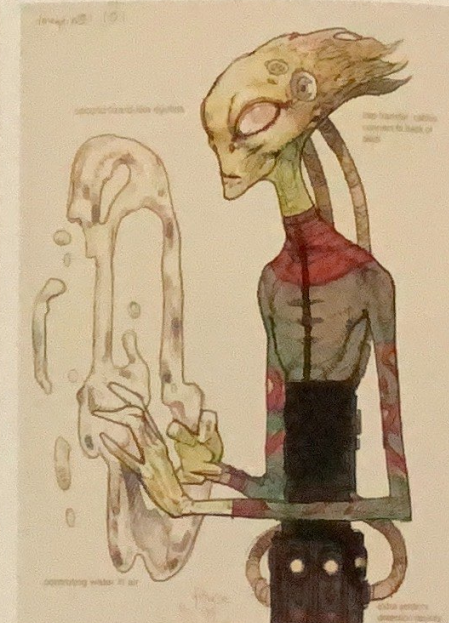


- 3.161 Ed Natividad's concept of Tipoca City retains the curved design, but the supporting stilts of the city are proportionally broader and provide more stability (October 20, 1999).
- 3.162 Maquette of the Tipoca City landing platform with Obi-Wan's starfighter giving a sense of scale.
- 3.163 Marc Gubbano's concept for the Tipoca City landing platform (March 9, 2000). The orange highlight indicates the part of the set to be built.
- 3.164 The Kamino landing platform set with Obi-Wan's Jedi starfighter. The digital camera is on a telescopic camera crane jib so that it can be positioned and moved behind the starfighter. The camera crew would rehearse the moves before filming with the rain turned on from the pipes running above the set.
- 3.165 Final frame of Obi-Wan arriving on Kamino and entering Tipoca City in the pouring rain.





- 3.166 Kaminoans have an elegant, elongated body structure and large almond-shaped eyes. Concept by Dermot Power (March 31, 2000).
- 3.167 Iain McCaig design for an "ocean creature" (October 28, 1999).
- 3.168 Dermot Power explored the idea of telekinesis in this concept (November 24, 1999).
- 3.169 Doug Chiang's concept would influence the design of the Polli Massans in Episode III: Revenge of the Sith (February 24, 2000).
- 3.170 Doug Chiang's concept was akin to the design that would be the final realization of the Kaminoans (October 28, 1999).
- 3.171 Production document showing the camera locations in 3-D for scene 59 where Obi-Wan meets Lama Su, prime minister of Kamino (January 31, 2001). The camera locations and angles for

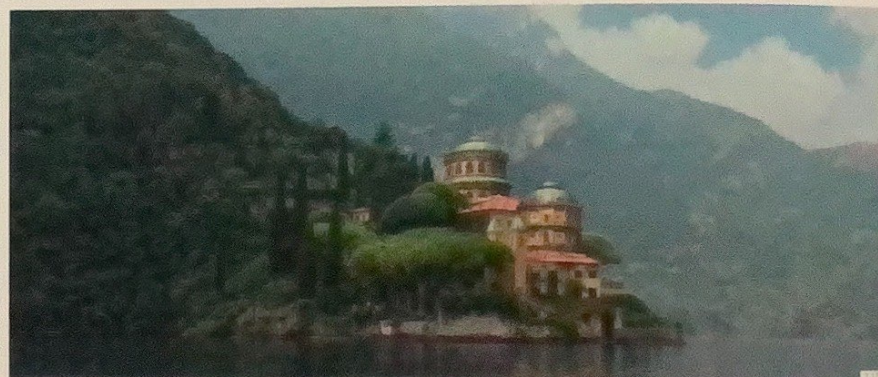
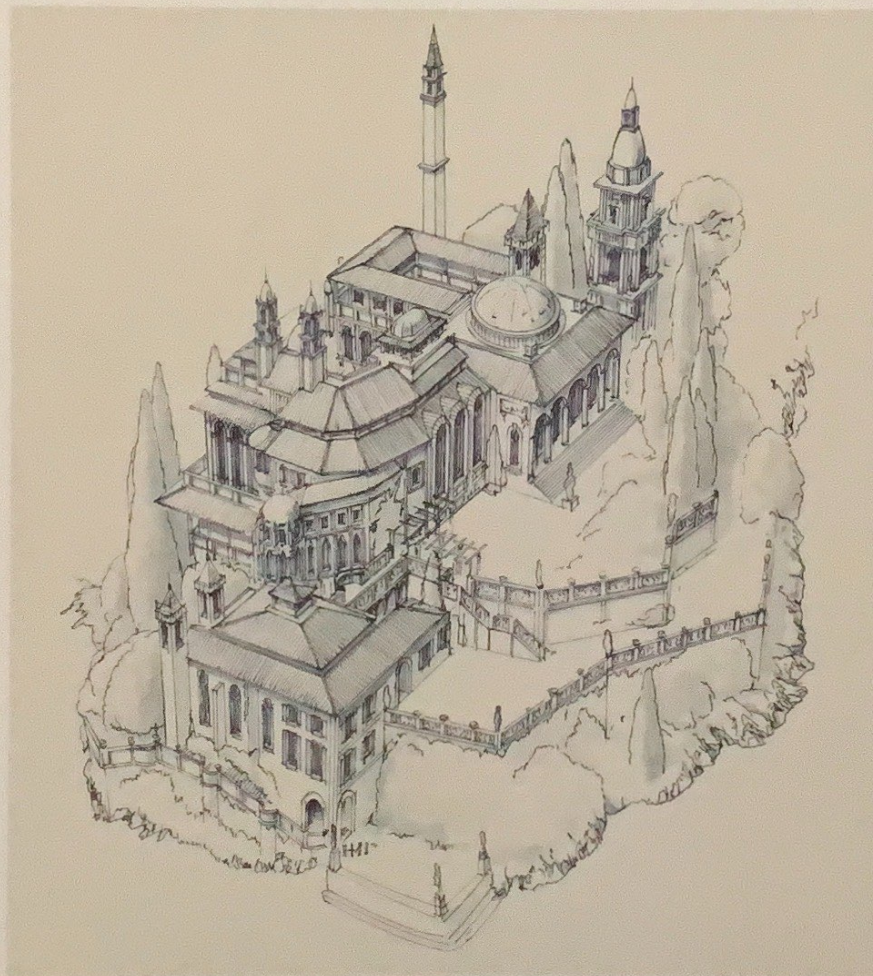


- each setup, as well as the relevant storyboard images, are shown. This document is useful for all departments so that the digital, model, and live-action elements can be seamlessly integrated.
- 3.172 Final frame of Obi-Wan surprised to learn from Lama Su that the Kaminoans have been commissioned to build a clone army for the Jedi. Obi-Wan improvises—allowing them to think him an emissary of Jedi Master Sifo-Dyas—and goes along with the Kaminoans so that he can tour the city.
- 3.173 Matchmove information sheet for model shot KOA 260 (July 17, 2001). For every shot, whether live action, model, or digital, a record of the camera position in relation to the set, objects, and actors is made so that the geometry and camera movement can be reproduced precisely. This shows the camera movement from #1 to #2 when Pat Sweeney photographed the model of Lama Su's office



“George really worked on finding a right balance between our ages. I am supposed to be older than Anakin and he is supposed to be someone that I can fall in love with and also seem younger than me. It’s a delicate balance because Hayden and I are the same age.”

Natalie Portman



I got three of my top animators together—Linda Bell, Hal Hickett, and Kevin Martel—and we decided on six shots using *The Empire Strikes Back* as the cornerstone of Yoda’s performance. We sat for a week or so and really tried to distill what was it about Frank Oz’s performance and what was it about the puppet that made it as magical as it was.

We looked at what was going on with Frank’s hand. What were the shudders and movements in Yoda’s body? How did the ears overlap and jiggle in the latex or in the materials that were used in the original puppet? How much did the eyes move? How did the jaw move? We discussed whether we should put the jawbone where it should be, or where the jawbone would be if you had a hand inside and where the foam would be, because that really changed the performance of the character. We’ve gone in between the two of them so that we have both control over the jaw and the lateral side-to-side movement of the jaw that Frank did when he was operating the puppet. We also have a range of motion that he was never able to achieve simply because of the little tiny gizmos that had to be stuffed into the skull of that puppet to move the eyes and squish the skin—we, of course, are free of that.

Then we tried to transfer that to the animated character. We have the ability to make the lips do all kinds of nuances that they couldn’t do with a puppet, but it didn’t look like Yoda so we dialed back on those. We were able to do some different things with the eyes, and the way the skin wraps around the eyeball, but we didn’t go as far as we could because it was becoming distant from the *Empire* performance.





3.177



3.178



3.179

We did three shots of him talking and three shots of him not talking, just acting with his face and face muscles. James Tooley, my technical animation supervisor, figured out how the chaining is going to work—how the character holds together and how we animate it—and Tim McLaughlin handled all the clothing and skinning of the character.

Once we spent a couple weeks on it I felt that we were getting pretty close, so I presented it to George and he loved it. It was at that moment that he said we're going with the CG Yoda. It was very exciting for me to come back to the studio and tell everybody, because it was a huge team effort.

Once we'd achieved that subtlety of performance, we moved down to the body. Now we're trying to figure out the length of his limbs and how he walks. We studied how Frank moved him around when we animated the shot with him walking with his cane—we saw the up and down beats that Frank had put into the character when he was moving. We are trying to figure out what's happening with the feet.

3.174 Ravi Bansal's concept artwork for the romantic Naboo lake retreat, titled "Padmé's Summer House" (November 17, 1999).

3.175 Final frame of the lake retreat where Padmé and Anakin are to reside to ensure her safety.

3.176 Dermot Power's costume design for a flowing gown for Padmé (May 26, 2000). The image notes that she has "shell hair."

3.177 Final frame of Padmé and Anakin arriving by gondola speeder at the lake retreat.

3.178 Lucas directs Christensen and Portman at Villa del Balbianello, Lake Como, on September 1, 2000.

3.179 Anakin steals an audacious kiss. Anakin: "When I am around you, my mind is no longer my own."

“George really loves the genre of romanticism, the Pre-Raphaelite look. We leaned heavily toward that, which meant looking back to the 1920s and ’30s.”

Iain McCaig / Concept Artist



George has told us that Yoda's going to be much more active in Episode II. I've yet to find out or see storyboards of exactly how active, but in anticipation of that we're trying to come up with new ideas of how to put his bones into his body, and the controls that we'll need to give him that subtlety of performance that he may need to be a Jedi Master in action.

I haven't seen the script so I have a lot of questions for George. "Was Yoda one of the greatest warriors ever, or is he much more cerebral, like a teacher, as we've seen him?" "We've seen him lift Luke's X-wing out of the swamp by using the power of the Force through his hand. Is his technique of battling the same, or does he actually wield a lightsaber like the other Jedi?" "Does he have the ability to zip across the room or make himself invisible or levitate?" "Is he affected by his age? Do his bones hurt? Does he get tired?" All that will affect how you animate a character in a sequence.

I approach it with as wide a view as possible, and then George will help rein us in and give us an idea of how Yoda is going to move, because we haven't seen it before.

Make This Work

David Tattersall Early in 2000, I got back from New Zealand, where I'd shot *Vertical Limit*, and Phil Radin at Panavision rang to tell me that the prototype Sony HDW-F900 camera with the Panavision zoom lenses had arrived, and asked if I wanted to test it. I went along to his office and he pulled me aside to tell me, "Look, we've spent so much money on these lenses you have to make this work." We got a model, props, cars, and a bunch of stuff, and shot tests for two days with Panavision paying for everything including the lighting and crew. The camera recorded high definition at 24 progressive frames per second.

Larry Thorpe On March 10, 2000, a film-out screening was held at Skywalker Ranch.

Mike Blanchard I'll never forget that because I was about as nervous as I've ever been. We had been working on this for years and I was afraid we were going to fail and let George down. David had done a lot of tests because we needed to figure out

the ILM pipeline—how John Knoll and others were going to work with the footage—the editorial pipeline, postproduction, and distribution. So we showed the film-out tests to George. The project leads from Sony and Panavision were there.

The source was from a HD camera so each frame was 1920 x 1080 pixels, but because it's *Star Wars* it had to be 2.35:1 aspect ratio, so we cropped it to 1920 x 818. Afterward, someone started to talk about some of their concerns and George said, "I don't know what you guys are talking about. What are you guys looking at? This looks great. Make it as good as you can by the cutoff date."

Rick McCallum Anyone who thinks for a moment that we would risk \$100 million of our own money if we didn't think the quality was not only better, or that we would go through all this pain if we thought the image quality was less, is just full of it.

Larry Thorpe The commitment had been made to shoot Episode II entirely in 24 progressive frames per second. Six prototype systems were made.

Rick McCallum They sent the gear in boxes. There were no manuals, nothing. The Sony executive wrote a letter saying, "We can't be held responsible for this."

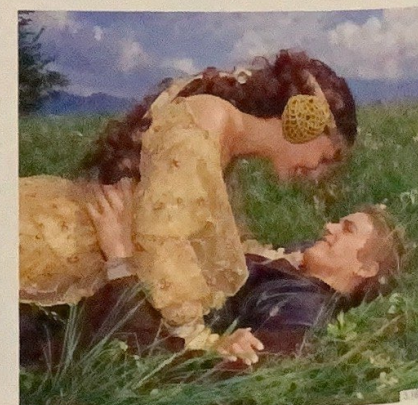
Into the Maelstrom

George Lucas Writing isn't my favorite thing to do. It's just hard.

Rick McCallum When George would get into periods that were difficult for him to find the space to write, I would say, "Listen, Jonathan Hales's waiting. I just have to give him a call." I hired Jonathan as a screenwriter on the *Young Indiana Jones Chronicles* and he did a fantastic job for us for a number of years. George resisted it, like any writer does, until you get to a point where you realize there's no other choice.

George had already written his first draft, and we were putting enormous pressure on him for information virtually every day by satellite transmission from Australia. It got to the point where we were sending models of sets to him and he was basing the script around those sets because otherwise there was no way we were going to be ready. At the beginning of April, two months before we were due to shoot, George needed to get the script out and have somebody work with him on it. Jonathan came in and they never left each other for a month.

George Lucas Sometimes it was dialogue, sometimes it was fixing a scene that wasn't really working. Having someone else

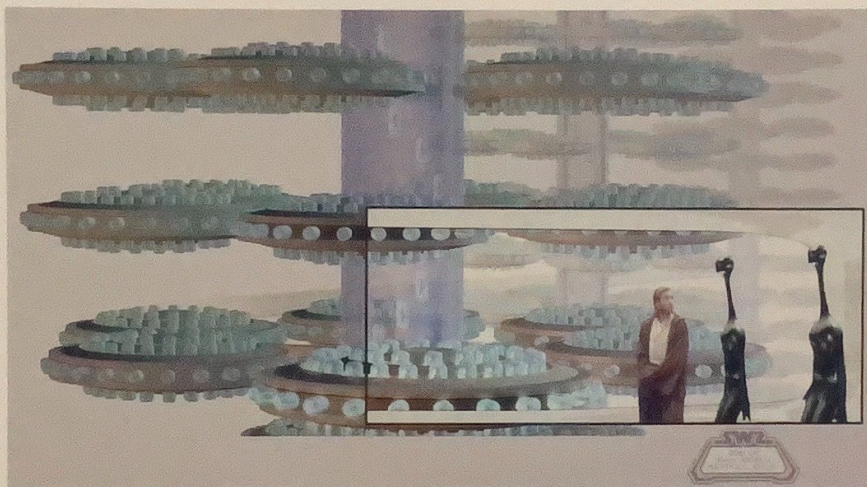




3.182

- 3.180 Final frame of Padmé and Anakin enjoying a romantic picnic in the glorious countryside.
- 3.181 Anakin tries to impress Padmé by riding a shauk, but he falls. She rushes to his aid, only to discover that he was pretending to be hurt. Scene 60 was shot on the Sasso San Martino near Lenno, Lake Como, on September 2, 2000. The crew of 115 were called for 7 a.m., got the first shot at 10:42 a.m., completed 35 setups, and wrapped at 16:20 p.m.
- 3.182 Doug Chiang's concept for a shauk—a bulky herbivore that lives in the lush green meadows of Naboo—was based on a flea and was originally designed for Episode I (October 31, 1995).
- 3.183 Padmé and Anakin share a kiss in this publicity still.





3.185

- 3.184 Obi-Wan is taken on a tour of the cloning facility on Kamino. Jay Shuster's concept for the clone hatchery has the appearance of a cephalopod with multiple tentacles emanating from a central "mother."
- 3.185 This design for the clone hatchery includes shot KOT 060 depicting Obi-Wan learning from the Kaminoans (February 15, 2001).
- 3.186 Kurt Kaufman's idea for the hatchery has rotating clone spheres (March 31, 2000).
- 3.187 Once hatched, the clones have an accelerated growth rate and can be created in half the time it would normally be expected to reach maturity. They are educated, as Obi-Wan can see in Ed Natividad's concept (April 23, 2000).
- 3.188 Iain McCaig takes a more organic approach to education with school towers (March 10, 2000).
- 3.189 Final frame showing the young clones (Daniel Logan) in their classroom. Obi-Wan learns that Master Sifo-Dyas ordered over one million units of clones on behalf of the Republic 10 years previous.
- 3.190 Iain McCaig's concept for a clone studying (October 23, 2000).

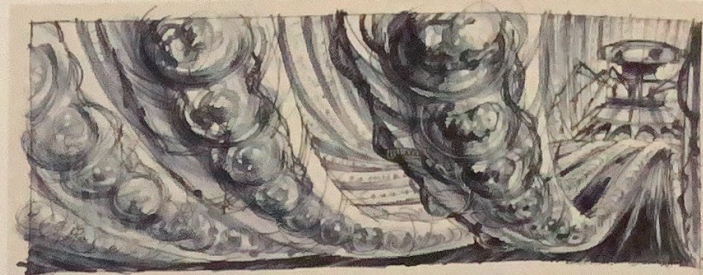
look at it and do a critique—I needed that support, because I was about to walk into the maelstrom.

Rick McCallum We got the script three days before we started shooting

Environment

Rick McCallum The biggest problem in the film industry—and I'm talking about the American film industry—is that it's based on fear. It's based on the fear that you can be fired at any minute, that you have no control over your life. There are people who are animals, who behave outrageously badly toward each other for political reasons—that is repugnant to us.

For us ego, pride, and vanity are the three things that keep you from working collectively as a group. It's one thing to have ego about wanting to get the best job done, but once it starts to interfere with the process and the people, forget it. When we started *Young Indy* we had a group of people we didn't know. It took about three or four months to get rid of the people that manifested one or more of those characteristics. After that we kept everybody.



3.184

You have to create a positive work environment for your crew. If they think they're being taken advantage of or used in any way, you're going to lose them completely. They'll put up with it for a while because they've got to make money and make a living, but not in the long run and not at the level that we're working at.

We don't want any tension. We don't want any freak-outs. We don't want any narcissistic behavior. We want to have fun. We want people to joke but be absolutely serious and committed to what they're doing. If you do that, then you can achieve anything.

Paul Duncan To make a movie requires a real physical and emotional commitment since you are often away from home for months.

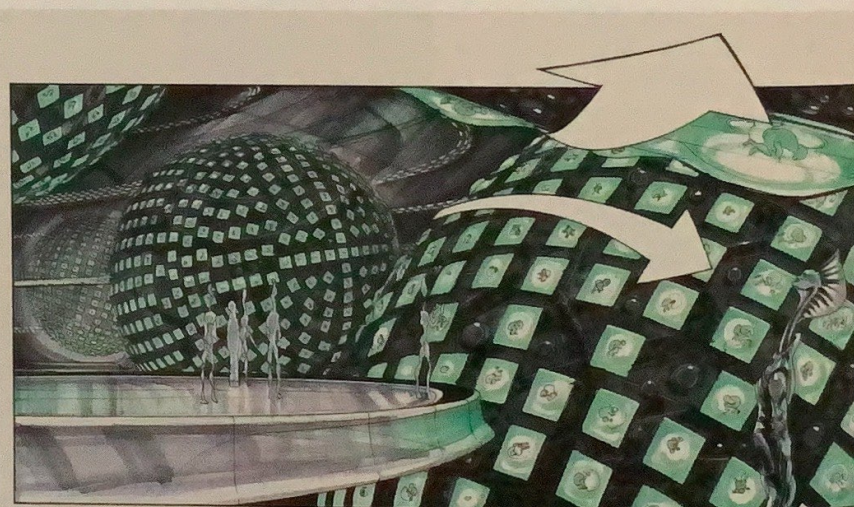
Rick McCallum That's part of the fun and the joy of it, to say, "Let's just go for it." But you have to have a family that understands: my wife was the number one commercials producer in the Czech Republic for 15 years, so she knew what the life was

like. But if you don't have somebody who understands that and you care about your family, you're screwed.

When we were doing *Young Indy*, some people couldn't cope with being away for a year. For the prequel trilogy, we were away in London and Australia for about four and a half years over a six and a half year period. You've got to have a pretty good relationship and you have to have a good environment to make sure that their families understand.

Even though you're making great money for your family, you have to have the mutual respect with your partner, they have to understand this is what you love doing more than anything, and that the quality of life they have is because of the sacrifices you're making now. If you have kids, it's tough on them—you miss their birthdays, their school plays, everything.

We encouraged our English crew to bring their families with them to Australia so they would have a relatively normal life. We'd write their schools that their children would do their homework, get tutored, or they'd go into a new school in Australia—



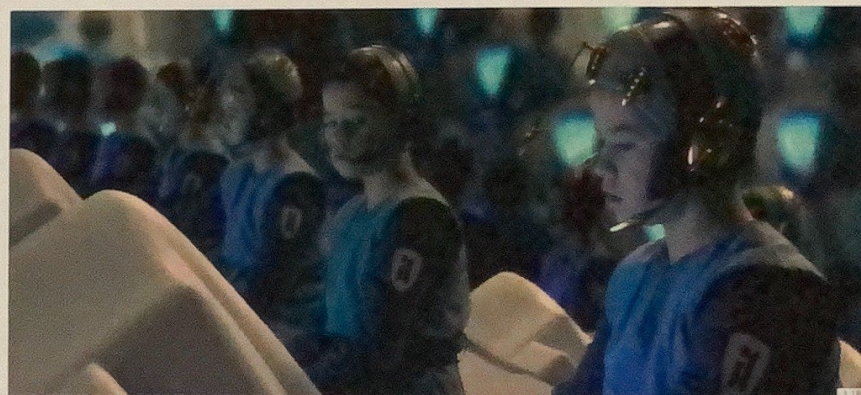
3.189

"We had to struggle with the bad design mojo of monotony and repetition. In time, the cloning facility designs adopted their strongest and most apparent theme—vast amounts of white space with strong graphic elements."

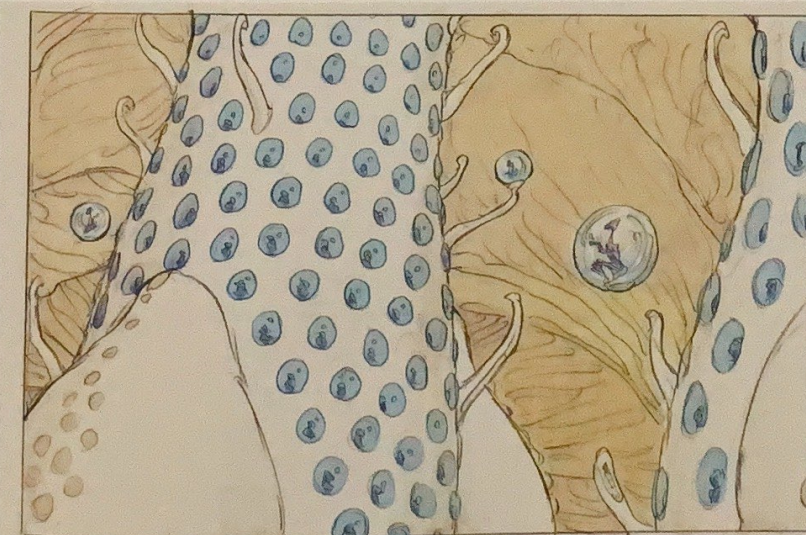
Jay Shuster



3.187



1.189



3.188

anything to keep that balance. We wanted them to know that we care about them as much as we care about any actor on the movie.

When John Knoll came, we got him a huge house because he has, like, six kids. When Rob Coleman came, we did the same. We always encouraged their families to come and be with them and have a great time. One of the great things about the Fox Studios is that it's so central you can't live more than 10–15 minutes away from them, so we'd wrap at 6:30–7 p.m., and by 7:30 the crew'd be with their family having a barbecue out on the beach.

The Vision

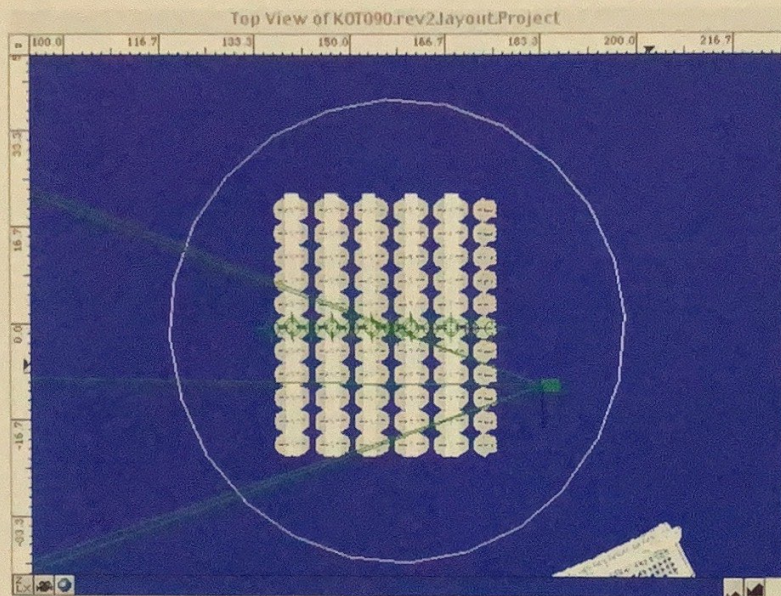
Rick McCallum George and I have always been in total sync, since the day we started working with each other. We'll joke and have fun, but in terms of the script, in terms of what he wants, it was a blissful 23 years for me because I knew exactly what he wanted and needed. We see each other every day, usually over lunch, talking politics, or I would ask something about the film if it wasn't clear what it was he wanted.

A director is looking for two things. He wants the truth without being humiliated or beaten up. Also, more importantly, he wants to know that he has a partner who is going to exhaust all the possibilities to get him every single thing that he needs and wants to express the vision inside his head.



3.190

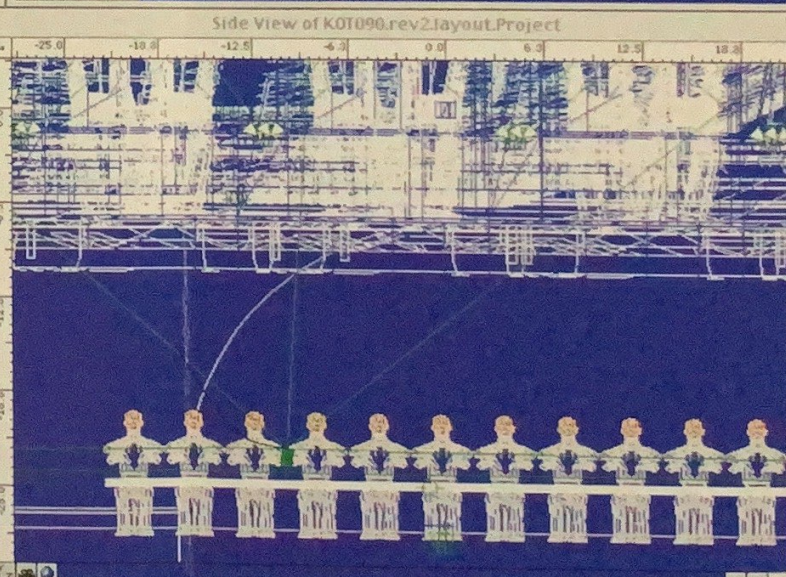
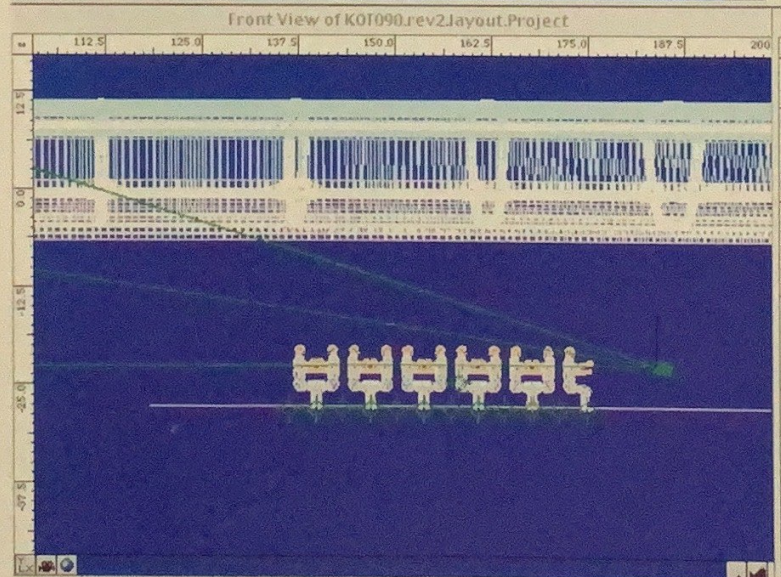
Some directors can plan out a film exactly, with precise storyboards and a very clear vision of what they are shooting. George doesn't do that. With George that vision changes. He has his idea. He starts to make it, and then it evolves. He needs that process and the ability to be able to shoot for very little money so that he has more time. Over time the movie is changing and growing in his mind. He sees a creature that has been created by the design department. "No, I'd like to see bigger ears and maybe forget the chin. Let's make his legs shorter. No, I made a mistake with the ears. Let's do..." And then, over the process of weeks or months,



KOT090v2.f001

Camera Info:
Track: 4' 2.5"
Distance from 1st row
of clones: 5'

Camera Height: 3' 2.5"
Camera Tilt: 8.5°
Camera Pan: -24°
zΔ: 0' 0"

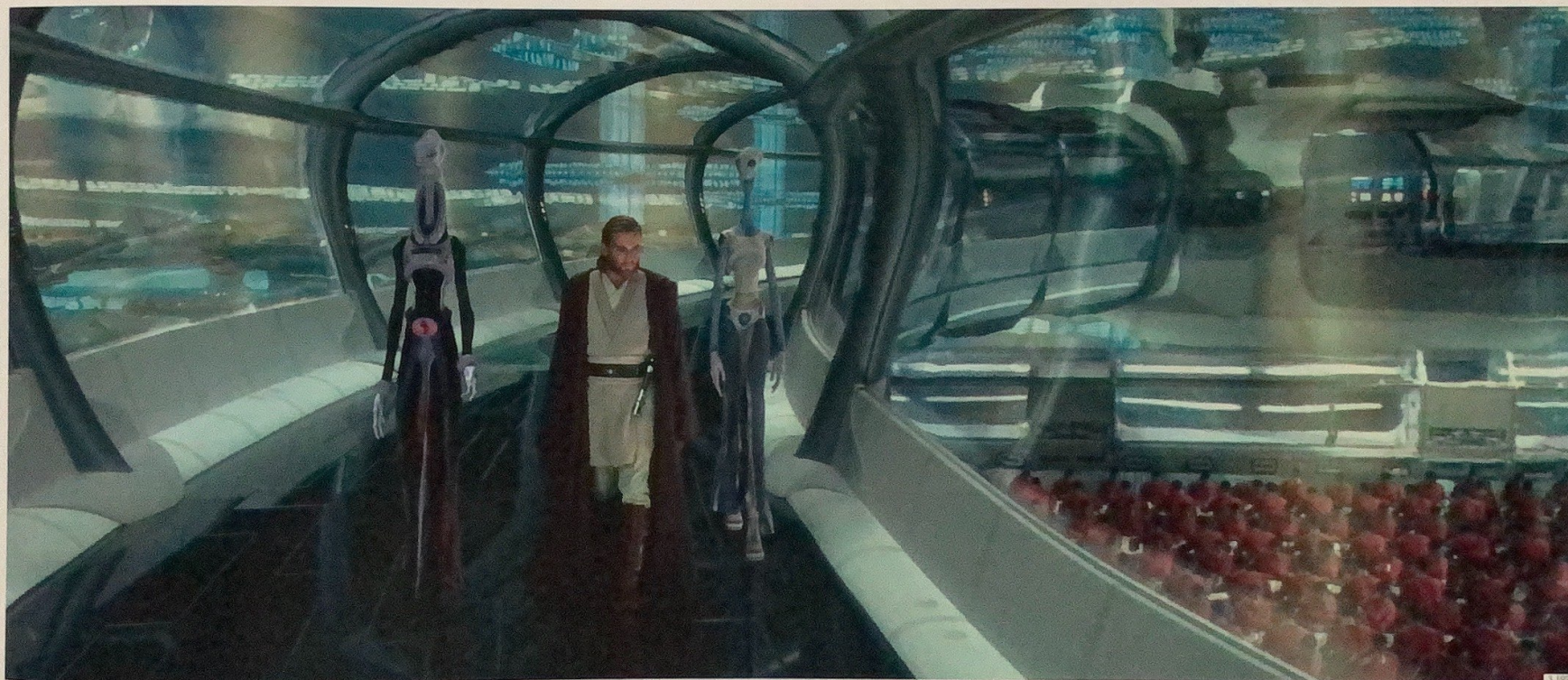


APPROVED

GWL 6/5

"The clones are treated by the water creatures in a way that's dehumanizing, much the way we sometimes treat animals."

Iain McCalg



3.191 Larry Chandler's CG concept for shot KOT 090 where the clones eat their meals in the commissary (June 5, 2001). The images show the different elevations of the computer model (counterclockwise from top left—top, side, and front views) and the camera's point of view. The camera position is shown in green. This was approved by Lucas on the same day.

3.192 Final frame of Obi-Wan inspecting the clones in the commissary.

it's changed and morphed into something else until he gets it. He can't express it exactly inside his mind's eye, but he understands exactly what it is he wants and that you have to go through a process to get it. But you also have to be patient and keep your crew in a place where they don't get frustrated. Luckily, they understand the process because we had the same crew that had worked for five years on *The Young Indiana Jones Chronicles*.

So by the time they were on *Star Wars*, we had a group of people that were completely and utterly in sync with each other

and who understood that, whatever changes there are, we can accommodate them.

We were under very strict limitations of money and schedule. He planned to shoot 60–70 days, do maybe a week of pickups six weeks later, and then do the same again six weeks later.

They weren't reshoots. They were additional shooting. George is learning from the performances and the editing, and then making changes to the story to make the film stronger.

Paul Duncan Each set has its own unique atmosphere and its own set of rules about what people can and cannot do. Could people make suggestions?

Rick McCallum Absolutely. It's a very collaborative set. Sometimes George listens, sometimes he doesn't. But in relationship to achieving a day's work, he always listens. When George comes in in the morning he's got three stock phrases. I don't know if he even thinks about them, but they are: "What if we did this?" or "Wouldn't it be cool if we did this?" or "You know, I was thinking,



PREDECESSOR TO
BOSSA FETT —



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10-8-99
EPISODE II
EARLY STORMTROOPER

"Jedi won't lead droids. Their whole basis is connecting with the life force. They'd just say, 'That's not the way we operate. We don't function with nonlife-forms.' So if there is to be a Republican army, it would have to be an army of humans."

George Lucas

maybe it'd be great to try this out," and you have to be completely flexible. If you have a deer in the headlights look with him, you're toast, because he's looking to work out an idea. He needs to know that if I go to him and say, "Look, we can't do this," that I spent days thinking about it, and I've exhausted all the possibilities, that I can't do it. If I just say, "I can't do it," there's no relationship.

At the end of the day, it's a director's medium, and he needs to know that the crew will do everything they can to help him achieve his vision.

Leap of Faith

Rick McCallum Seven days before we started shooting we got the cameras in Australia.

George Lucas They gave us the first six.

Mike Blanchard The serial numbers were 00001, 00002... They didn't have a manual yet, so it really was like a beta test.



3.193, 3.199 Between June and October 1999 multiple artists submitted designs for the clone armor, each of them trying to capture the essence of both the stormtrooper and Mandalorian armors. Ed Natividad's ideas were inspired used to develop the design for bounty hunter Zam Wesell (October 8 and September 24, 1999). Natividad: "For my early stormtrooper sketch I wanted to indicate it was a human not a robot, so I had the mask detached from the breastplate. George stamped it 'OK' and chose it as the bounty hunter. I tried to do some modifications, but George always wanted more of the original sketch."

3.194, 3.196 Jay Shuster (September 23 and 21, 1999) successfully merges the eyes of the bounty hunter helmets with the mouth of the stormtrooper helmet.

3.195, 3.197-198 Doug Chiang's concepts for the helmets and armor (September 20 and 5, June 22, 1999).



3.196

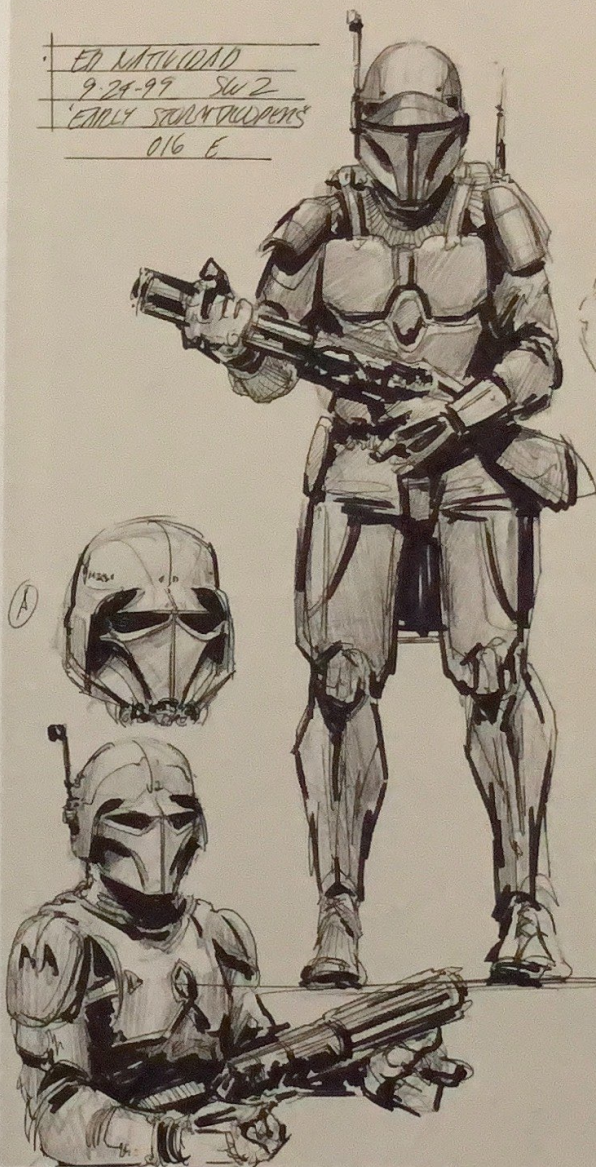


3.197



3.198

ED MANDALORIAN
9.24.99 SW 2
'EARLY STORMTROOPERS'
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3.199



We've spent the last five years trying to figure out how to make this work and I'm thinking, "There's no way this is going to work." I had a stomachache for months leading up to filming because if we failed, not only would we have let George down, but everybody in the industry wanted us to fail. There were some pieces that were just held together with spit and baling wire, and so many things could have gone wrong.

It was scary as heck. Fred and I knew where all the pinch points were because he was the architect of the workflow and we worked together on the post side of things. I didn't let George know how afraid I was that this may not work. I voiced it to Rick, obviously, to make sure he knew what the risks were, but, in the end, you take a big leap of faith.

Rob Coleman The script was given to us on a Friday and we started shooting Monday morning. So we had three days of prep.

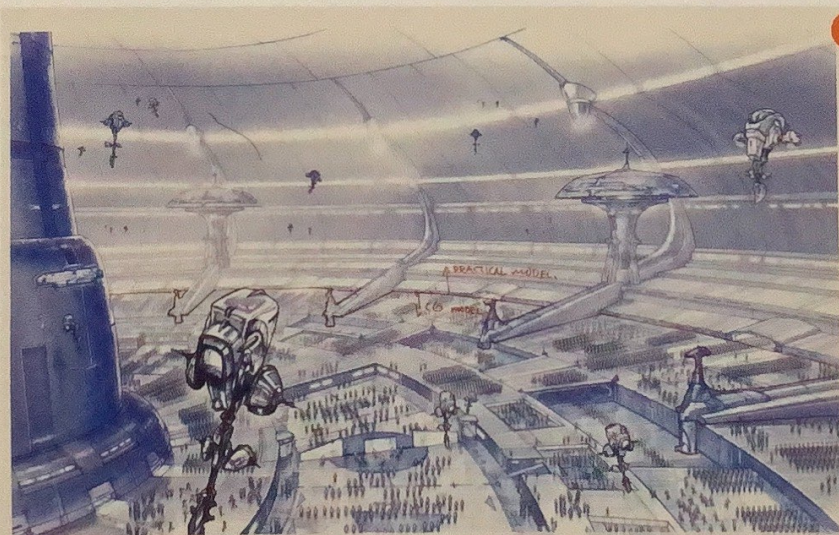
The script, dated June 24, 2000, was titled *Jar Jar's Great Adventure*.

Ahmed Best It was George's joke because he knew the title was going to leak to the press. That was George's middle finger to the whole "everybody hates Jar Jar" thing.

Principal photography commenced on June 26, 2000, on Stage 6 of Fox Studios Australia with scene 5—in the Senate Chamber Palpatine announces the death of Amidala before Padmé arrives to confirm the assassination attempt and to state her opposition to the creation of an army to fight the Separatists. The crew was called at 7 a.m.

Mike Blanchard George and Rick made a wonderful decision early on, before the shoot, that there were no film cameras as backup, so everybody had to be committed. I thought that was a really psychologically important thing to do. There's no other option.

David Tattersall George likes to work with two cameras, A and B, usually running close to each other with slightly different

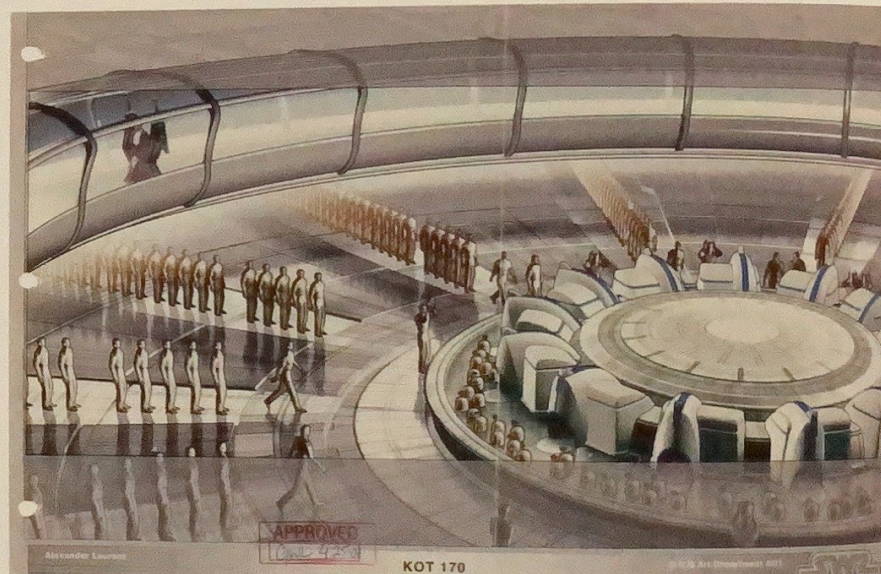


SW2 shot KOT 160

Training Field Arena Concept 2

©ILM 3.21.01 A. Laurant

Go! Approved 3/21/01
3.201



KOT 170

focal lengths. We had a camera always on the Technocrane ready balanced. Then there were two cameras set aside for the second unit. There's one left, which was a reserve in case anything went down.

Mike Blanchard These were camcorders. You had the HDCAM tape inside the camera, and an umbilical was run to the video village. We had a guy from ILM write some software so we could see the status of all the camera settings on a laptop. We'd spent a lot of time testing various settings to maximize contrast and detail to give us the best picture possible out of the camera. If the camera lost power for a nanosecond it would automatically go to some default state, so between every take Fred Meyers would hit a button to automatically reset the camera settings.

Paul Duncan So Fred Meyers is the first DIT (digital imaging technician)?

Mike Blanchard Absolutely. And he had to reeducate everybody on set about the new way of working. For example, the camera crew was used to pulling the battery off a film camera,

- 3.200 Concept art of shot KOT 160, where Obi-Wan views the vast training camp for the clones.
- 3.201 Alexander Laurant's concept for the clone training area in shot KOT 160 (March 21, 2001). The red line defines which areas would be constructed as practical models and which would be developed as CG. George Lucas approved it on the following day.
- 3.202 Alexander Laurant's concept for the clone suiting area in shot KOT 170. Each clone queues to pick up his helmet. This was approved on Lucas on April 25, 2001, with a proviso: "GWL approved pending adding soldiers milling about in between lines, putting on helmets, and then exiting out under the overhang walkway." This would make the clones appear to be more individualistic.
- 3.203 Final frame of the clone parade ground. There are 200,000 units ready to ship.
- 3.204 Ed Natividad's concept of Obi-Wan and Lama Su inspecting the clone parade area also gives a strong sense of the planet's fierce rainstorms (May 3, 2000).

moving the camera, and plugging the battery back in, but if you did that on an electronic camera you'd have to reboot it. So they had to make sure that they left the cameras plugged into a battery all the time.

Rick McCallum We had two 40-inch plasma screens set up in Fred's little tented area that were color corrected under instruction from David Tattersall.

George Lucas In the past, with film, we had to work on faith, perhaps looking at a little black-and-white video assist. And if it didn't look right in dailies—it was out of focus, or it was over lit...

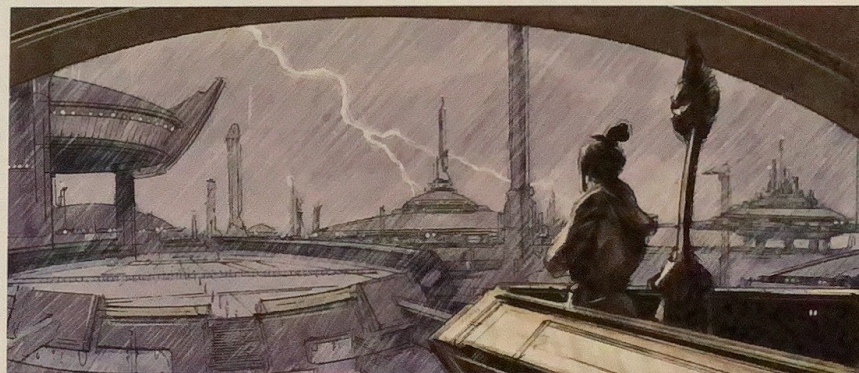
Rick McCallum You're screwed.

George Lucas You lost a day of shooting, which was about a half a million dollars. But now with digital, I can see exactly the way it's going to look in the theater. I would stand next to David looking at the actual shot—not at a black-and-white video, or through a little glass—and say, "You know, the problem is I want more back-light over on this side." He would go off, adjust the lighting, and five minutes later I would say, "That's great. That's what I want."

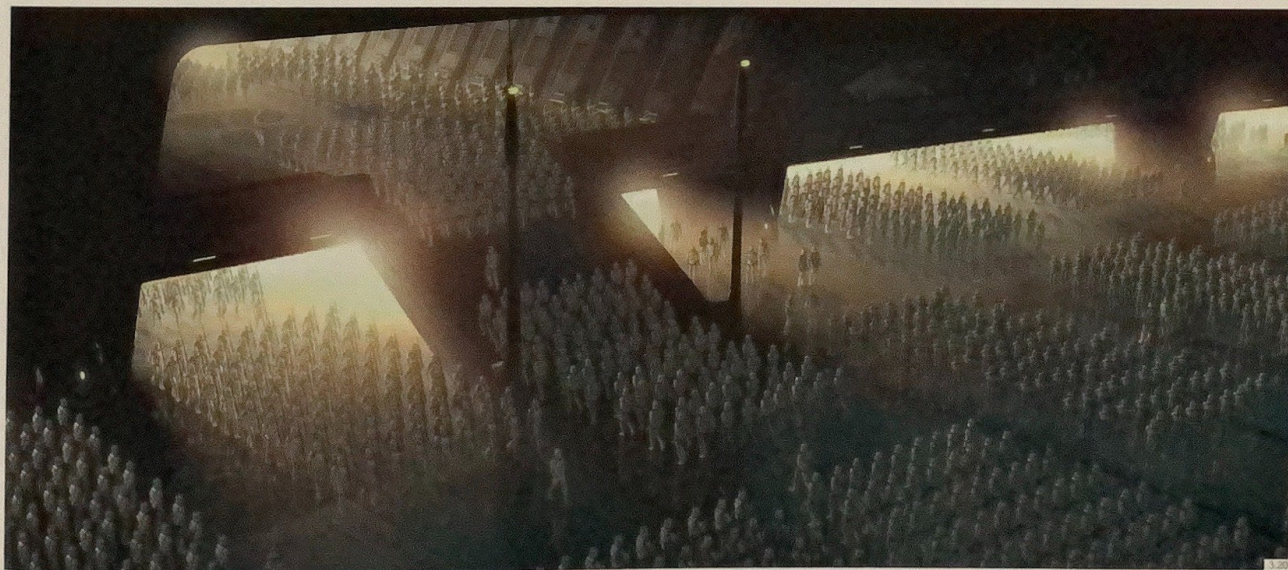
David Tattersall We're laying the foundation onto which ILM builds the finished movie. We've got to try and make it as good a quality as possible, for the blue screens to be even and flat and correctly illuminated. We have to light the foregrounds in such a way so that the atmosphere will be harmonious to what we know the background will be eventually.

Rob Coleman John Knoll was responsible for being on set for every visual effects shot in the movie. John is making sure that the shot is composed in a way that we'll be able to composite in the background, other characters, digital vehicles, and even my foreground characters. He's really experienced at the lighting and later on will be dealing with the compositing and making sure that everyone looks photorealistic.

I'm there to look after the acting and the performance of the animated characters—how a character will walk and breathe and talk. John is making sure that the character's going to look right and blend in and feel like it's sitting beside Obi-Wan. So that is our overlap.



3.204



3.203

On set George is talking about the story and the scene and the shot. I can watch him with the actors and the voice actors who are going to be the voice of the digital character. At that time we can decide on how much interaction there is. I'm looking to make sure that the interaction is believable, that the audience is sitting there believing Watto or Dexter is absolutely real.

Rick McCallum When you're shooting a four-minute scene on film, after each take you've got to reload because a reel is 10 minutes—that takes 5-10 minutes.

George Lucas Every time you do that, you lose the energy of the scene. The actors go to lie down and everybody talks for a while, so you lose all of the momentum to make a really intense scene work. Any director will tell you that.

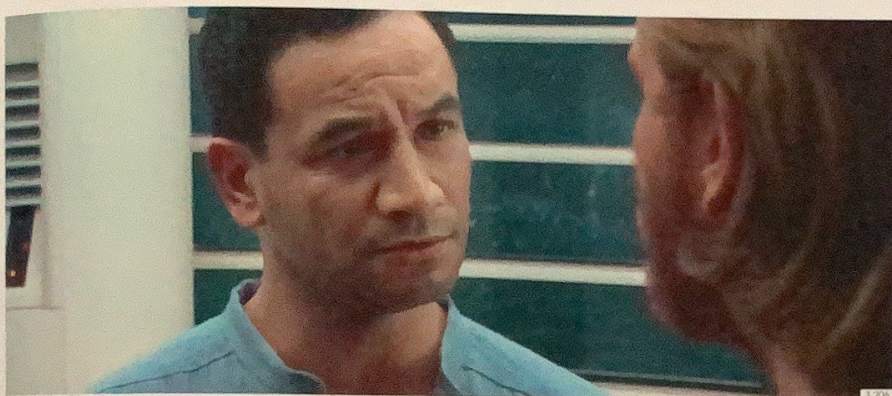
Rick McCallum With digital we didn't cut—we would keep rolling because the camcorder tapes held a 40-minute load.

George Lucas We'd finish a take, I'd run in and say, "Look, that was great. Back to the first marker. I just want it a little bit faster and more intense," and do it all over again—I would do three takes in a row. The actors would get into the rhythm of it, and I'd get better performances.

The first shot was completed at 8:45 a.m.

Mike Blanchard When you're shooting film and you finish a camera load it has to go off to be developed. Anything can happen to the negative in transit between the set and developing





3.206



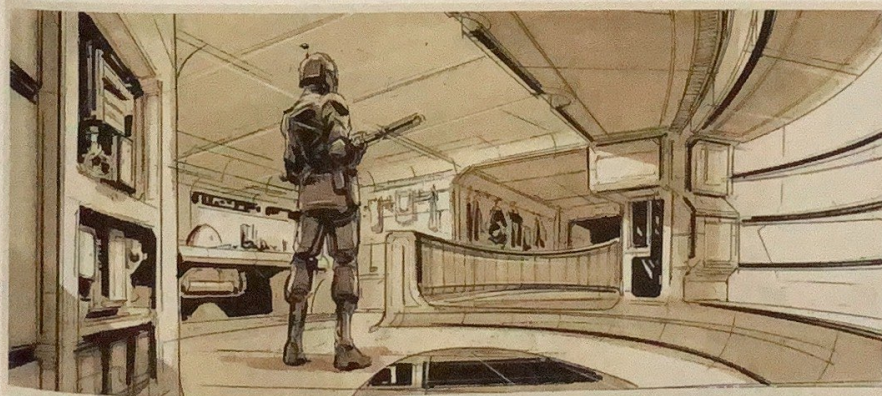
Scene 71178

3.207

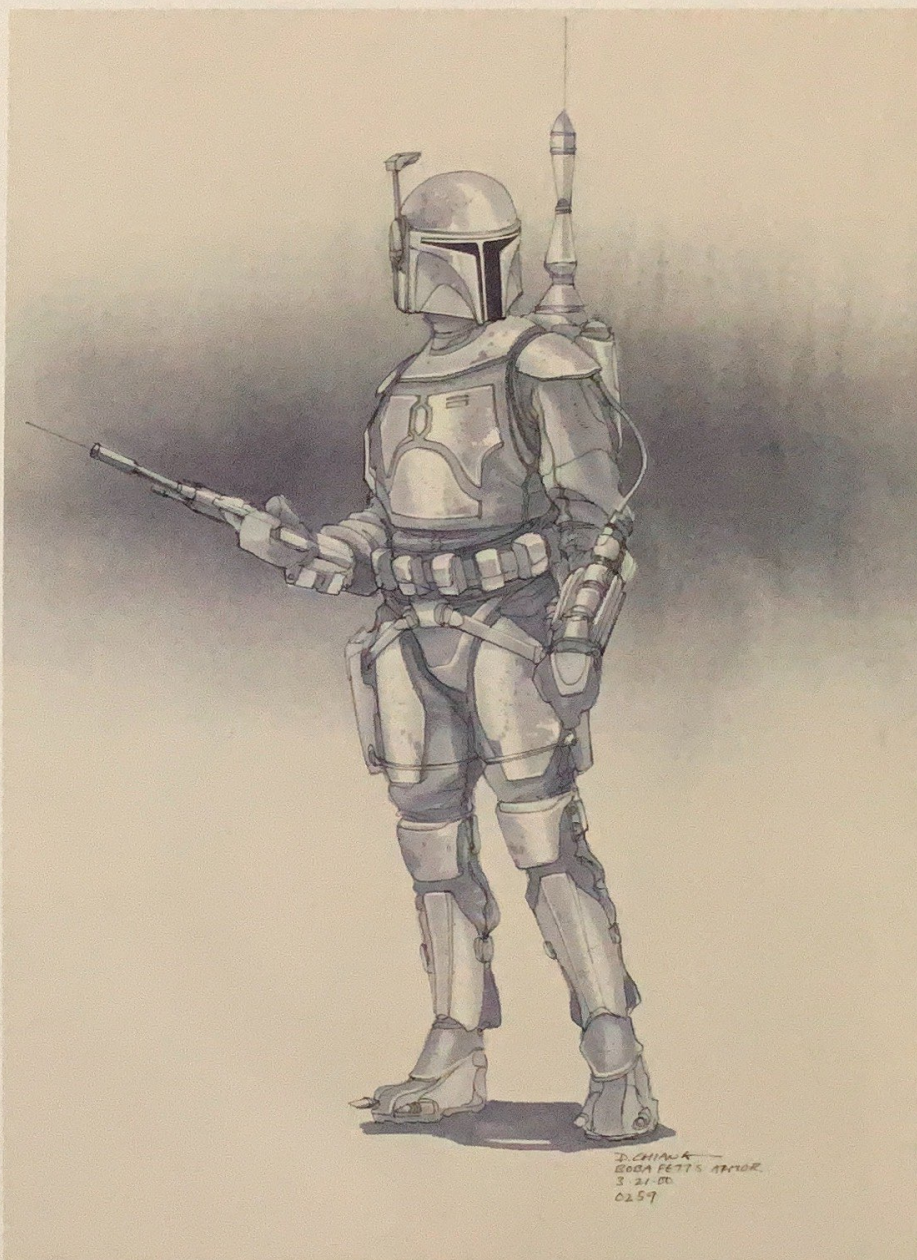


STAR WARS PHOTOFEST
BOBA FETT'S APARTMENT - TUPUCCA CITY KAMINO
SCALE 1:31 - 197.90

3.208



3.209



D. CHIARA
BOBA FETT'S ARMOR
3.21.00
02.57

3.210



3211

"We felt pretty stupid biting into fruit that didn't exist but it was a fun scene to shoot. George told us to improvise some of the dialogue—and of course it got inappropriate very quickly."

Natalie Portman



- 3.205 An aluwa ("air whale") flies over the stormy oceans ridden by a Kaminoan. Winged creatures had featured as concepts in previous films but had never been realized until Episode II.
- 3.206 Final frame of Obi-Wan meeting the clone template, Jango Fett (Temuera Morrison).
- 3.207 Continuity Polaroid for scenes 77/78 showing Jango Fett's bounty hunter apparel, which is hidden from Obi-Wan.
- 3.208 Maquette of Jango Fett's apartment.
- 3.209 Ed Natividad's concept for "Boba Fett's quarters" (March 14, 2000).
- 3.210 Doug Chiang's "Boba Fett's armor" design (March 21, 2000).
- 3.211 Iain McCaig's costume design portrays Padmé as being significantly more mature (January 6, 2000). Lucas deemed the artwork to be "Fabulouso."
- 3.212 Lucas directing Portman during the dining room scene. She has to imagine that Anakin uses the Force to move the fruit.
- 3.213 Continuity Polaroid of Portman and Christensen in the fireplace alcove of the Naboo lake retreat.
- 3.214 Erik Tiemens's concept for the picturesque Naboo lake retreat exterior (July 2001).
- 3.215 Final frame showing Padmé and Anakin dining together as he tries to impress her with his Jedi skills by moving a piece of fruit across the dining table.
- 3.216 Final frame of Padmé and Anakin together in the fireplace alcove. Anakin wants to kiss Padmé once again but she resists. She says she has more important things to do than fall in love. Anakin proposes that they keep their love a secret, but she declares that they would be living a lie.



Scene 55

3212



3.12



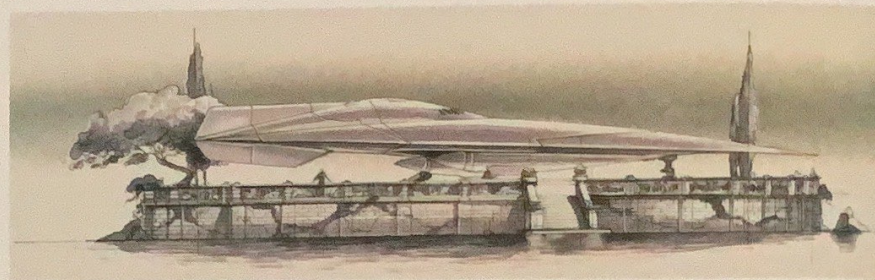
3.125



3.126

“Rain gives you a different kind of light. I had to rearrange the shooting schedule so that I could shoot the early morning scenes in the rain, so it looked like early morning light, and then wait until later in the afternoon when the rain stopped to shoot the other scenes. You have to work around the rain.”

George Lucas



3.220 Doug Chiang had two concepts for the landing platform in the middle of the lake—one on a little island (shown here, March 14, 2000), and the other on a floating platform.

3.221 It was raining in Lake Como on August 31, 2000, for exterior scenes 74, 73, and 166—Anakin and Padmé talking on the

veranda, leaving for Tatooine (shown here), and getting married—and the weather caused an electrical malfunction with a resultant delay. Scene 75 was not used in the final cut.

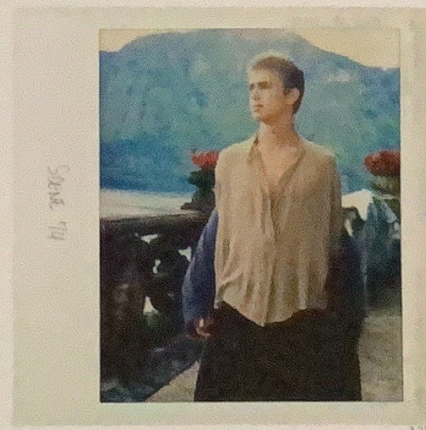
3.222 This concept for Padmé's ornate bedroom at the lake retreat by Jay Shuster was not used in the film (September 9, 1999).

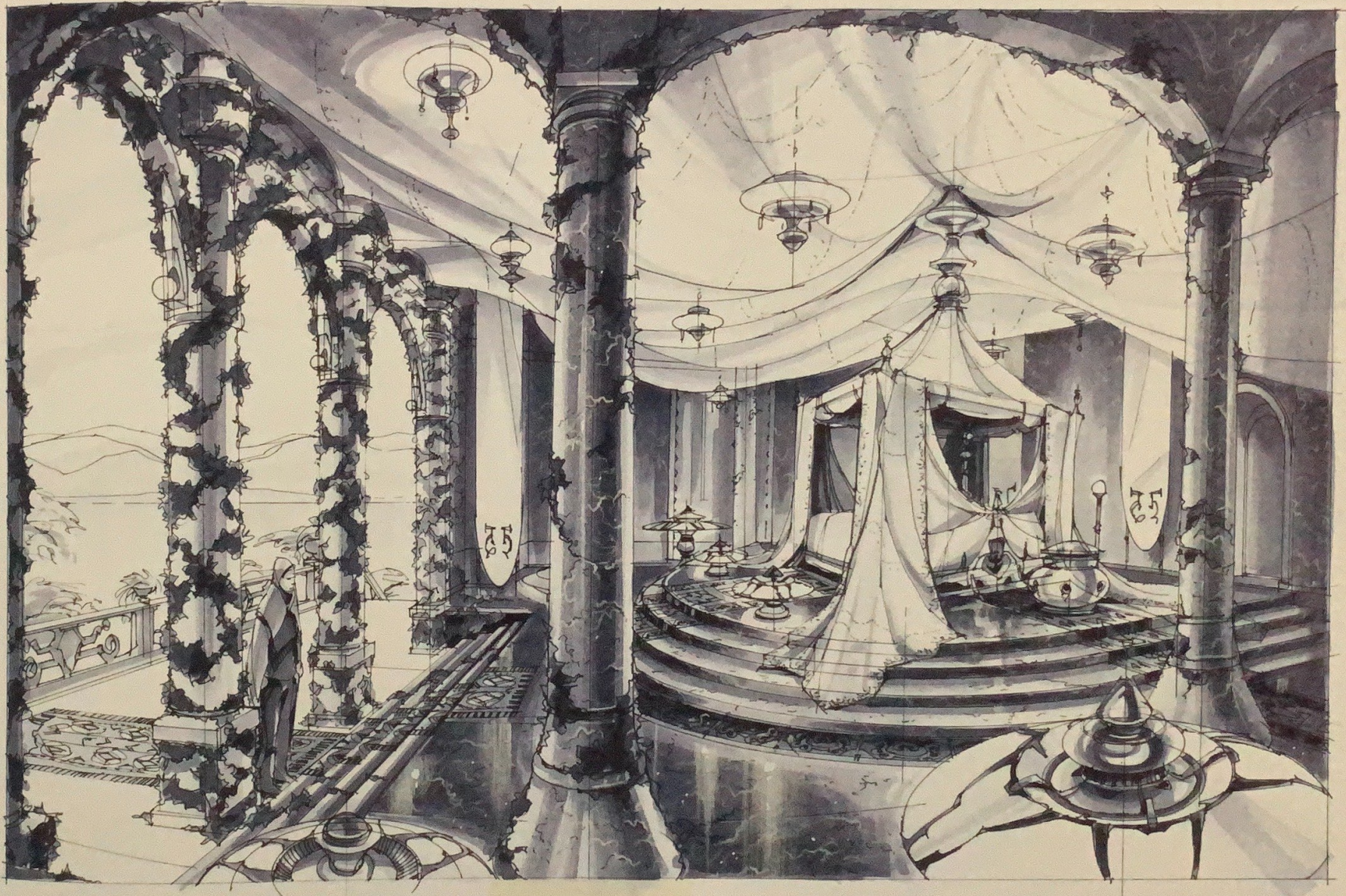


3.217 Anakin reveals to Padmé that he had terrible nightmares about his mother in pain and suffering, and he must go to her. Padmé agrees to travel with Anakin to Tatooine so that he is still protecting her, as per his mission.

3.218 Dermot Power's concept for Padmé's nightgown is rendered in the style of Alphonse Mucha and the Art Nouveau movement (September 1, 1999).

3.219 Continuity photo of Hayden Christensen from scene 74.





SHUTTER
9 9 99
QUEENS BEDROOM

0017J





WATER CITY JEDI FIGHT - 1/1/00 23.00

3.224

3.223 Jango Fett is preparing to leave with Boba in Slave 1, but Obi-Wan Kenobi, lightsaber at the ready, has other ideas in Doug Chiang's concept art (April 19, 2000).

3.224 Iain McCaig's speculative storyboard of a Jedi fight on Tipoca City (March 3, 2000). At the time, the concept artists didn't know who would be fighting whom nor where the battles would take place.

4/10

11



Jango hits hard.

38

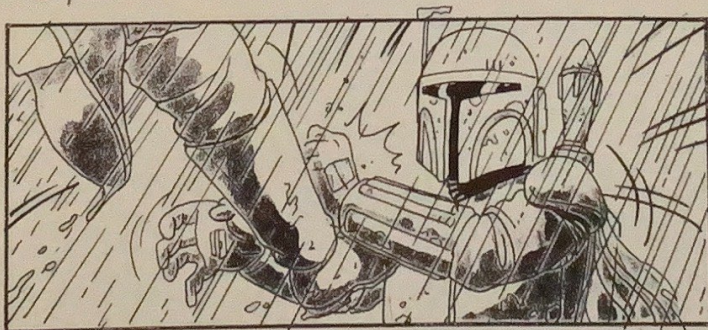
2nd unit



(cont'd) but recovers as Obi-Wan moves to attack

39

2nd unit



Jango traps Obi-Wan's foot.

40

2nd unit

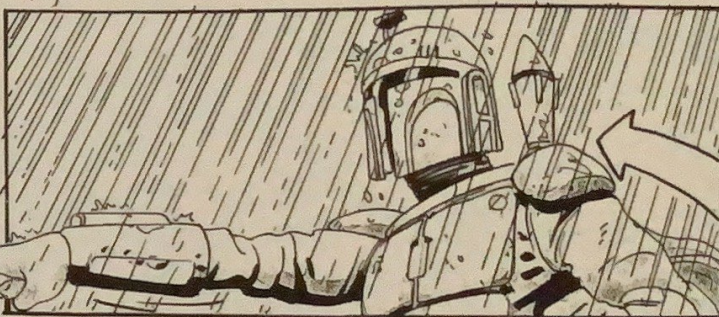
6/10

13



Obi-Wan gets to his feet

44



Jango comes up, aims with a arm-mounted blaster

45



Obi-Wan leaps over the blast and onto Jango's shoulders, pummeling him...

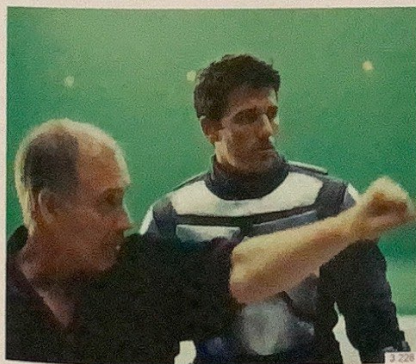
46A

Part I

2nd unit



3.227



3.228

- 3.225-226 Storyboards for the Jango Fett/Obi-Wan battle in the ruins of Tipoca City. As well as the visual information on each action, it is also indicated which shots will be undertaken by the second unit film crew.
- 3.227 Stunt doubles Scott McLean (Jango) and Nash Edgerton (Obi-Wan) rehearse the action from board 46A.
- 3.228 Scott McLean watches Ben Bartt as he directs the second unit for the fight sequence.
- 3.229 Temuera Morrison in full bounty hunter costume.
- 3.230 Obi-Wan temporarily loses his lightsaber so he has to engage in hand-to-hand combat.
- 3.231 Filming the fight in front of a green screen. Mini trampolines were used to give the stuntmen additional height to their jumps.
- 3.232 Final frame of Fett using his rocket-powered suit to gain the high ground and fire at Obi-Wan, who uses his lightsaber to deflect the energy and defend himself.
- 3.233 Stuntman Nash Edgerton doubles for Obi-Wan during the combat.

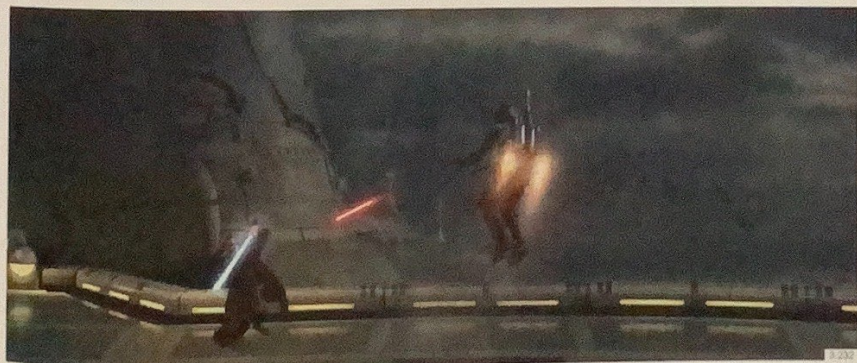
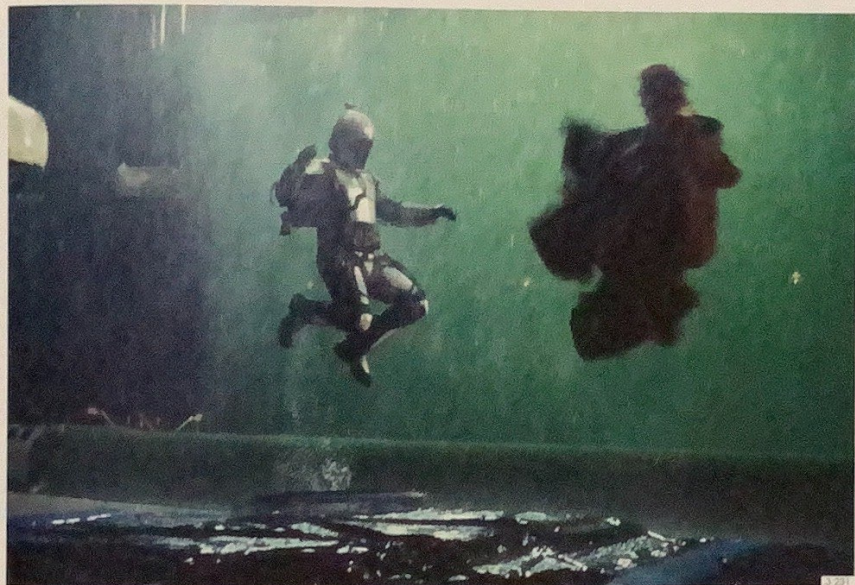


3.229

“George wanted Jango Fett and Obi-Wan doing these big jumps and flips as they’re fighting on Kamino. But with real-life performers, you have to shoot Fett jumping, then him flying, and you cut again to show him landing. George felt that forced an artificial style of editing and cinematography that he would rather not have to deal with.”

John Knoll





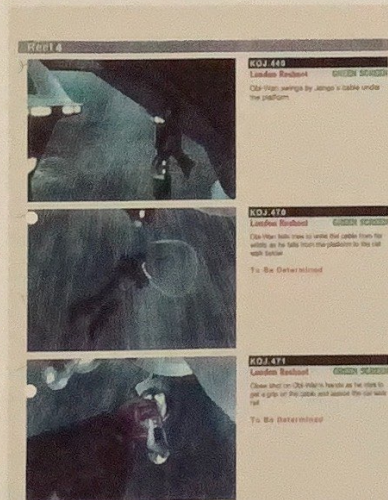


George Lucas Normally, watching film dailies involved spending 45 minutes to an hour every day, either at lunch, or at four o'clock in the morning, or at the end of the day, when you're exhausted and you can't even see straight. But for this shoot we watched dailies on the set in between takes. I'd be watching for the performance and everybody else would be checking costumes, props, focus, VFX, or whatever.

Mike Blanchard Typically, a producer would have to wait for the dailies to be processed and cut together before striking a set and starting the next build, but on this shoot Rick would call editorial to make sure that there were no problems with the tapes, and confirm that we had the coverage we needed so he could strike the sets that night if he needed to.

Rick McCallum We timed everything on *The Phantom Menace*. George likes to get at least 35-40 setups a day. Film is ten minutes a reel, so reloading and checking the gate each time takes an hour to an hour and a half every day. We save a lot of that time with digital.

- 3.234 Final frame showing Fett flying toward Obi-Wan and shooting out a cable with which to capture the Jedi.
- 3.235 Storyboards KOJ (Kamino Obi-Wan Jango) 440, KOJ 470, and KOJ 471 were filmed at Ealing Studios, London, on April 3, 2001. Jango is on top of the structure connected by a cable to Obi-Wan hanging below. Jango cuts the wire and as Obi-Wan falls he creates a lasso with the cable to save himself.
- 3.236 Preparing Ewan McGregor to be dragged by the cable. Note that the digital camera equipment is covered in plastic because the scene uses artificial rain to simulate Kamino's climate.
- 3.237 Falling from the Tipoca building, Jango tries to halt his descent by using the claws in his armor's forearm to rip through the metal.



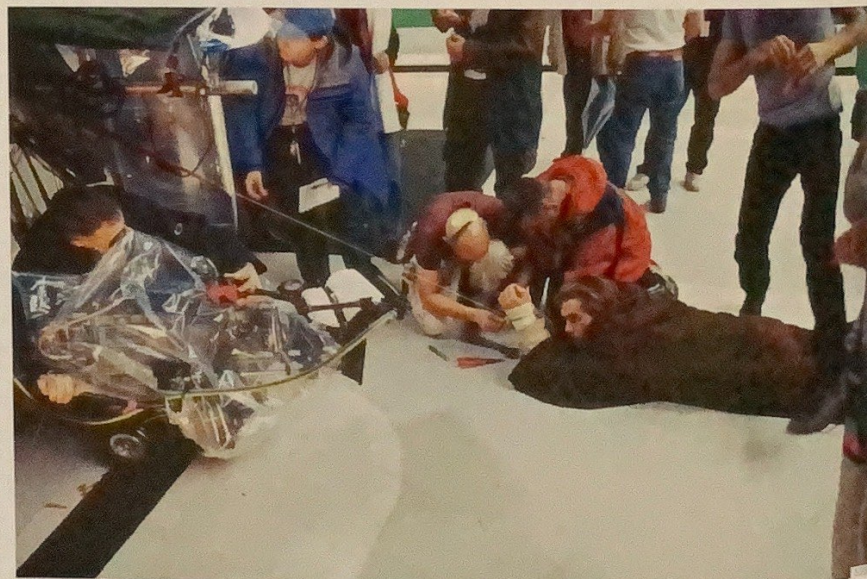
3.238

It. Likewise in the developing and printing processes. That's a scary few days for producers.

But with digital, whenever we were finished shooting on a tape we would run it straight over to editorial, put it in the studio deck, copy it in real time to another deck to make a clone of the original, and then vault the clone in a different building—all within an hour. That meant we had two originals. That was the first time any film ever had that luxury.

We'd also do a down-conversion to standard definition so that the footage could be edited on the Avid. This meant the editor could be cutting the morning's footage that same day before you've wrapped. With film, it would be the next day or more usually a day after that, depending on where you were shooting.

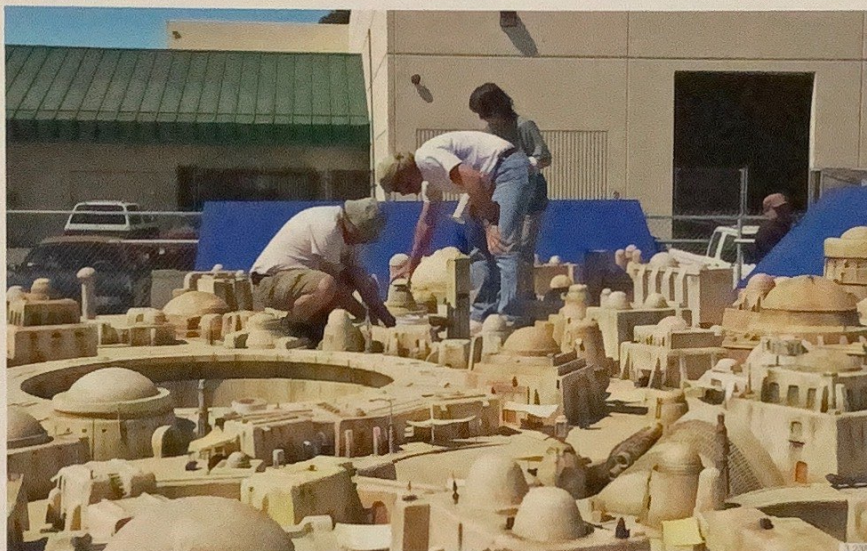
Rick McCallum The difference in cost is about \$1.8 million. We shot the equivalent of 1.2 million feet of film. That's the equivalent of 220 hours. When you take the cost of the negative, developing, and printing it, the transfer, the sound transfers, and the telecine, it equals a serious amount of money. And if you're shooting in different countries you have that negative shipped out, processed, and shipped back. There's freight agents involved and you risk your negative being lost or destroyed. When you're shooting in the digital arena, 220 hours of hi-def tape is \$16,000. And if you're simultaneously making a clone, which becomes your safety master, that's another \$16,000. And then your down-conversion to put it into an editor is another \$16,000. So for \$48,000, you're making a movie without any of the cost of processing or transferring negative.





“The Tunisian Tourist Board was interested in maintaining the Mos Espa set for The Phantom Menace as an attraction. In fact, they added a bit to the set. We’d finished off the parts of the buildings that the camera would see, but they finished off the buildings, and added others.”

Garin Bocquet / Production Designer



Fred Meyers / High Definition Supervisor It was controversial that we were going to shoot this picture in HD using digital cameras, and certainly at ILM it raised many eyebrows. I think that after the second week of shooting it finally sunk in that we were shooting digitally, and we would come back without any film. That being said, we did spend a lot of time planning for this, and put a lot of systems in place to prepare for it. So I think we were ahead of the curve in terms of having what was needed to handle it. Not only on the set and location, but also in postproduction.

Padawan Learner

Hayden Christensen In rehearsals you’re breaking down the script and trying to make sense of the lines. You interpret George’s direction for how you should play this character, but he never sits down with you and says this is what Anakin is thinking. He wants you to have your own influence on how your character should be portrayed because now it is my character.

Christensen started on June 28, shooting scenes with Natalie Portman in the Naboo yacht. The following day he shot with Ewan McGregor on the nightclub alley set in the scene where bounty hunter Zam Wesell is assassinated.



Hayden Christensen Anakin has grown up with no parental influences for the past 10 years of his life, so Obi-Wan has become a father figure for him. He loves him, but at the same time there is still that resistance because Anakin wants to break free of what he is doing right now, which, I guess, is a theme of all the Star Wars movies. So there is that conflict and animosity between the characters when Obi-Wan won’t let him make his own choices.

Obi-Wan is the master and I am the Padawan learner, so there are certain things that I can pick up from Ewan because he’s already been in my shoes, so to speak. I look at the way he



- 3.238-239 Model makers Dave Murphy, John Goodson, and Lauren Thomas working on the model of the Tatooine spaceport and surrounding city.
- 3.240 Final frame of Padmé’s starship arriving on Tatooine. This is shot TWO 010, a combination of model shot (which has a lot of detail), digital ship and set extension, and live-action figures on the streets.
- 3.241 Model maker Steve Gawley inspects the Tatooine model. Gawley was responsible for creating all the model drawings as well as their construction.
- 3.242 Shot information sheet for the Knoll unit. The final item on the sheet refers to the arrival of Padmé’s ship for shot TWO 010, including 15 people in Tatooine outfits in the background. They were to “shoot outdoors in sunlight on slab,” and to match to the alignment of the sun when the miniature was shot.
- 3.243 Final frame showing Anakin meeting Watto and asking what has happened to his mother Shmi. Watto sold Shmi to a moisture farmer named Lars, and heard that she was freed and they married.
- 3.244 Padmé and Anakin arrive in Mos Espa using a droid-operated rickshaw. This was shot in Tozeur on the same sets erected for The Phantom Menace.



SHOT: CFC170
 SUPERVISOR: John Knott
 SHOT DESCRIPTION: Shot of Obi-wan landing his speeder to train station by nightclub. This was just the first of many.
 SHOOT METHOD: Shot locked off of Corusant city street people walking/talking. Shot people in four planes of six people each. They will use the people for far background.
 CHARACTERS: Ambience characters.
 COSTUMES:
 PROPS:

SHOT: CFC230, 240, 247, 250, 280
 SUPERVISOR: John Knott
 SHOT DESCRIPTION: Obi-wan scolds Anakin about dropping his light saber sequence.
 SHOOT METHOD: Shot one set up for all behind of Corusant city street people walking/talking. Shooting one setup for use in all these shots. Shot over a long period to maintain continuous continuity, then editors can break it down into shots. Also, see the final comp of shot really needs people in multiple planes on left of frame.
 CHARACTERS: Corusant city street people walking/talking.
 COSTUMES:
 PROPS:

SHOT: TWO010
 SUPERVISOR: John Knott
 SHOT DESCRIPTION: Big silver ship comes in and lands in one of the dark buildings on Tatooine. Camera cranes over to high shot of people walking outdoors.
 SHOOT METHOD: Shot outdoors in sunlight on also. Shooting high down on characters. First out if anointing from sensors lift will be overhead enough. Shot from fixed camera position, may want to pan 18 with them, on a curved path to create perspective change. See the miniature for setup alignment. They shot the miniature around 2:30 p.m. (Check date).
 CHARACTERS: 18 Tat People
 COSTUMES: Tatooine outfits
 PROPS:



carries himself on set and the way he relates to his surroundings. There are certain mannerisms the Jedi have because they are confident. They also stand on guard, and there is a physicality to them since they are protectors.

Scene 10, where Obi-Wan and Anakin arrive at Senator Amidala's apartment to provide protection after the attempt on her life, was shot on July 3-4 on Stage 1.

Hayden Christensen This film is mostly a love story, particularly for my character. When Anakin is introduced in the film he sees Padmé for the first time in 10 years, and what was a very childlike desire and attraction and affection turns into a much more passionate love. Maybe that frightens Padmé a little bit.

On July 5 they shot the assassination attempt on Padmé in her bedroom using poisonous kowhun creatures.

The crew moved to the Fodder Building on July 7 to shoot on the Tatooine Homestead Garage set. This was a recreation of the set in Episode IV where Luke first sees Leia's message to Obi-Wan Kenobi. There were three scenes allocated for this set, with scene 118 shot first. This is a key scene in the movie, just after Anakin, in grief over the death of his mother, kills all the Sand People, including the women and children. Padmé brings food and drink to Anakin in an attempt to console him over the loss of Shmi.

Hayden Christensen Yoda predicted that Anakin should not be trained because he has such a strong connection to his mother, and would miss his mom. So there's a fear of and longing for love, knowing that it's not going to be there. What's Yoda's line? "Fear is the path to the dark side. Fear leads to anger, anger leads to hate, hate leads to suffering."

The crucial turning point to the dark side is when his mother dies. In this scene in the garage I've just gotten back from the Tusken Raider

“Those Tusken walk like men, but they’re vicious, mindless monsters. Thirty of us went out after [your mother]. Four of us came back. I don’t want to give up on her, but she’s been gone a month. There’s little hope she’s lasted this long.”

Cilegg Lars



Padmé—concerned by the sudden departure of her fledgling murderous boyfriend—she asked if Threepio was happy. He soulfully confirmed that he was not unhappy, and that indeed everyone there was very kind and considerate. He only regretted that Master Annie had been made to leave so quickly—a midi-chlorian problem as far as I remember—and had no time to finish his handiwork as maker and add the requisite coverings to his creation. It was very difficult to be like this. “This?” enquired the feeling Padmé. “Naked!” replied the ashamed and sensitive droid. “Naked! It simply wasn’t protocol!” For Threepio, existence is nothing without a proper structure of what is correct. Imagine the trauma of the intervening years as he wandered unclothed around the moisture vaporators—protocol generally frowns on public nudity, even on the giant beach that is Tatooine. Moved by this confession, Padmé’s eyes dropped to the empty floor where she



camp, and that’s my big breakdown where I confess to all the men, women, and children that I’ve just slaughtered in my supreme anger.

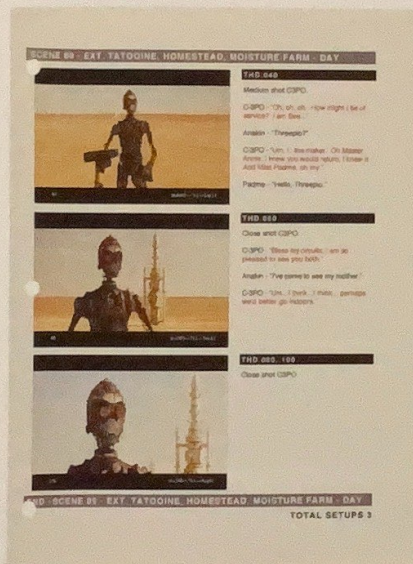
Anakin has that feeling of failure. His most prominent goal in life was to free his mom, and he failed. So even though he is destined to be the most powerful Jedi there’s that longing for a greater power, which the dark side possesses. That’s seductive. He wants to be able to stop people from dying. So he’ll stop at nothing, to be as aggressive as he needs, to achieve that.

George Lucas Anakin’s flaws, like all classic mythological heroes, are the flaws that everybody carries with them. He’s struggling with the same issues that everybody struggles with, and that allows him to be human. A good Jedi overcomes those flaws.

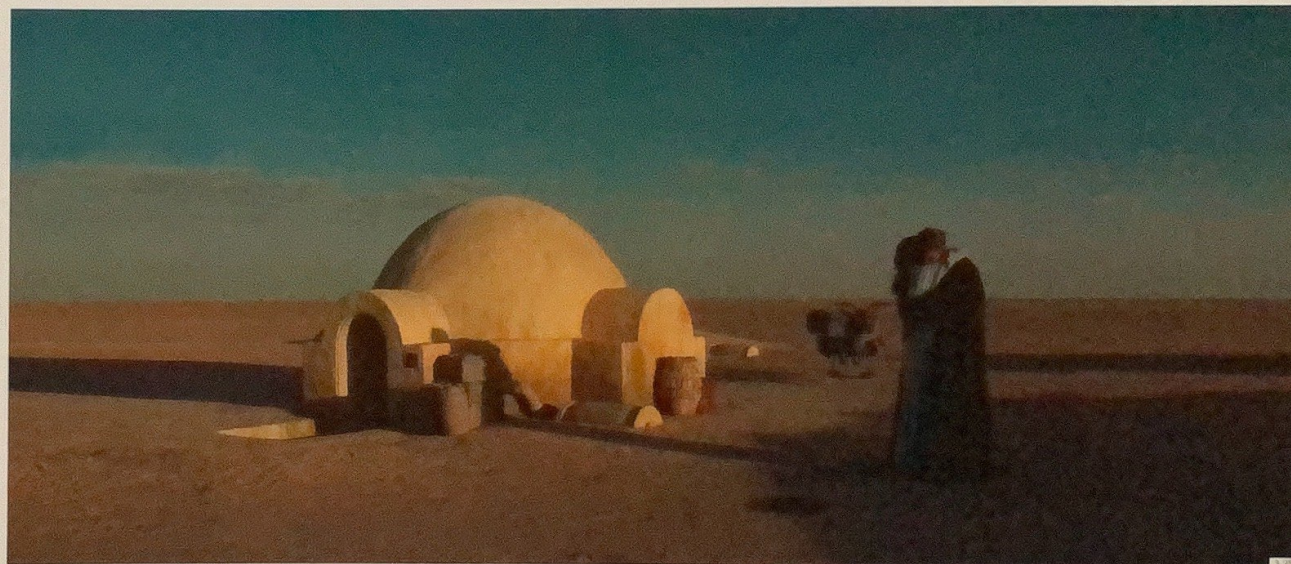
After scene 118 was completed, the same set was used for scene 102.

Anthony Daniels The scene went something like this... Discovered alone in the homestead garage by an insomniac

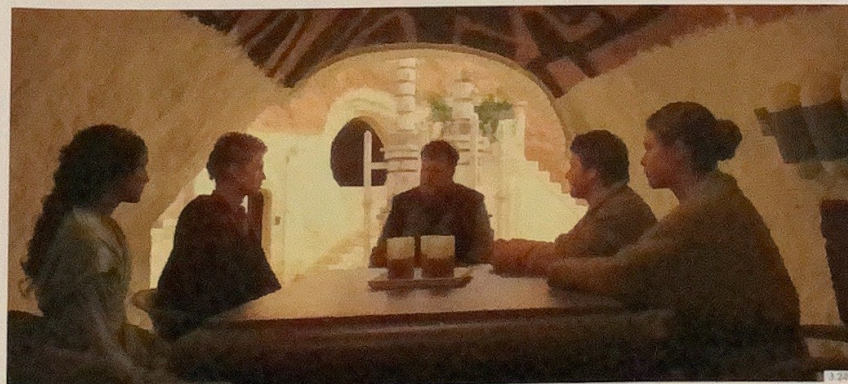




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3.250



3.249

found at her feet a box of coverings. "I never noticed," said the astounded droid, while admitting that he was not very mechanically minded, in a manner of speaking—possibly an admission of total blindness would have been more accurate. Gracefully bending to rummage in this newly noticed treasure chest, the sharp-eyed ex-queen found another chest and a face and more besides.

Shooting began at 5 p.m. with Tony Daniels operating the C-3PO puppet.

Don Bies/Droid Unit Supervisor The puppet works using a Japanese style of puppeteering called Bunraku, where the puppeteer stands behind the puppet and is attached to key points. As Tony operates it, the puppet mirrors his movements. We modified the rig for Tony by borrowing a Steadicam harness from the camera crew that distributes the weight evenly over the torso. In Episode I C-3PO's walk was allowed to be stumbly because he was newly built, but for this movie we wanted him to walk like Tony does in

3.245 Anakin and Padmé arrive at the Lars homestead and are met by C-3PO, who recognizes his maker.

3.246 Inside the homestead C-3PO presents Anakin and Padmé to master Owen Lars (Joel Edgerton, left). Anakin's stepbrother. The shots of the moisture farm exterior and interiors echo the images first seen in *A New Hope*.

3.247 In the script C-3PO remained unfinished and his casings were later added by Padmé, so the shoot featured the puppet version of the droid operated by Anthony Daniels.

3.248 This is the shot list for the November 4, 2001, reshoot of Anakin meeting C-3PO at the homestead. Although C-3PO is "naked" in the images, Daniels performed the shots fully dressed as C-3PO in the shoot at Ealing Studios, London.

3.249 Final frame at the homestead where Cliegg Lars (Jack Thompson, center) explains Shmi's fate to Padmé and Anakin. Shmi was kidnapped by a Tusken Raider hunting party and has been gone a month so there's little hope that she has lasted this long. Owen and Bera (Bonnie Piesse) also listen to the tale.

3.250 Anakin borrows Owen's speeder bike to search for his mother and embraces Padmé before he departs.



the suit so, with the help of the creatures department, we changed the legs to walk a little better.

The scene ends with Padmé putting the chest piece on C-3PO. They wrapped at 7 p.m. On July 10, shooting resumed with scene 116: early the following morning C-3PO is almost fully covered and Padmé only has the face mask to put on.

Don Bies It was George's idea that C-3PO was not gold, but that he was covered in a bunch of found pieces from different robots. Also we hadn't put Tony in the suit for 13–14 years, so we had to make sure that he fit in the suit.

George Lucas C-3PO doesn't age so I can use the same voice. Tony's voice hasn't aged that much and, amazing enough, Tony hasn't aged that much either. He looks almost exactly like he did then. And he can still fit into the outfit! He's a droid, what can I tell you? (laughs)

Don Bies For the scene, Tony wore the whole costume except the front of the head, and C-3PO's eyes were over Tony's eyes. We put magnets inside the headpiece, so that when Natalie set the mask onto the eyes it locked into place, ILM will digitally insert the puppet head into that.



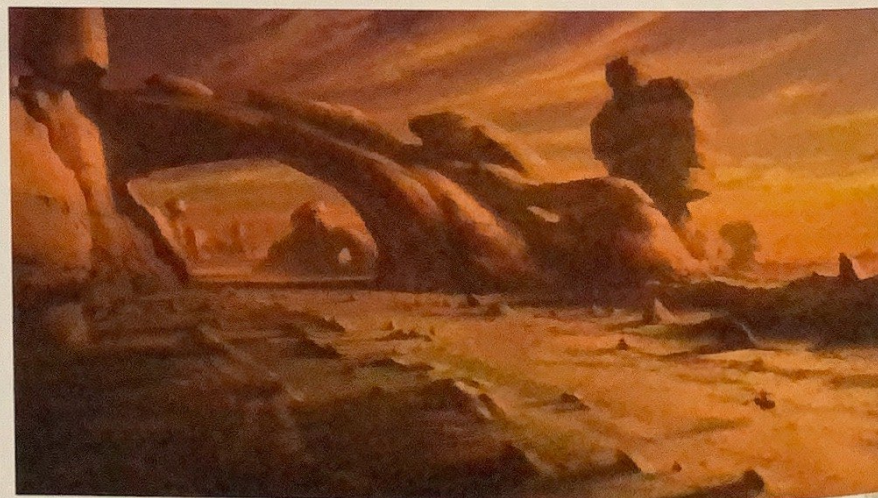
The scene ends with Owen admiring the new C-3PO, and then gifting the protocol droid to Padmé just before Anakin returns.

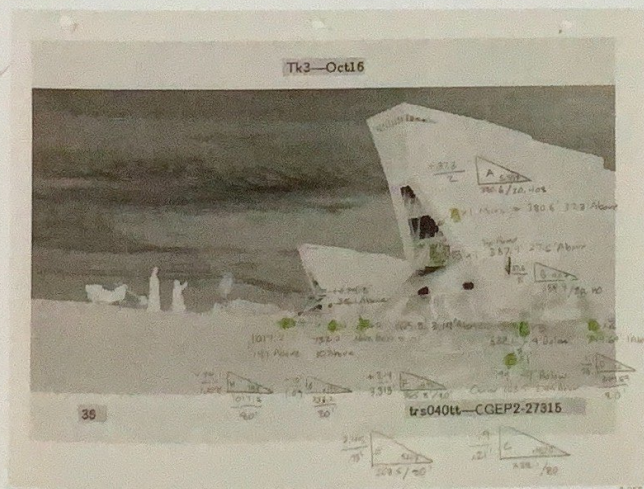
The Weirdest Job

David Tattersall A lot of the sets have blue screen elements, so you might have one or two walls, and then the rest of the set was blue screen.

Hayden Christensen Acting to things that aren't there and acting to people wearing construction hats with little cardboard cutouts of aliens pasted on the top of it is really weird. I've got so many different marks—I wave my hand here and that moves there, and he's supposed to be an alien. You've got so many more variables to play with that it's distracting, and you sometimes lose your place.

Obi-Wan investigates the death of Zam Wesell and follows the clues to the water planet Kamino, where he lands on Tipoca City, is welcomed by Prime Minister Lama Su, and is escorted around the cloning facility. On July 11, Lucas shot Tipoca City.



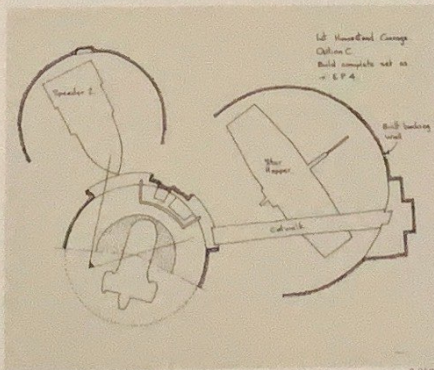


- 3.251 Final frame of Anakin on the speeder bike as he searches for Shmi, the twin sons of Tatooine setting in the background, signaling that time is running out.
- 3.252 On March 30, 2001, Hayden Christensen shot Anakin speeding across the Tatooine landscape. There were four takes on two cameras with the actor sitting on a blue gimbal against a blue-screen set. The only physical item that can be seen is the handlebar of the speeder.
- 3.253 Ryan Church's concept has Anakin's speeder on the right-hand side, tiny in relation to the vastness of desolate Tatooine, adding a sense of futility to Anakin's mission (November 6, 2001).
- 3.254 Final frame of Anakin asking the Jawas for information.
- 3.255 Notes for shot TRS 040 (Tatooine Rider Search) 040 showing a list of background characters, labeled A-H, and the calculations for the distance and angle of each from the camera. The extras were shot using this information then digitally composited into the image.
- 3.256 Shot list for filming extras for multiple scenes, including shot TRS 040, which is delayed until after 2:30 p.m., when the children who are playing the Jawas have finished school. The young extras include John Knall's children Jane and Alex.

SHOT	DESCRIPTION	EXTRAS	NOTES
Tuesday			
00F221	Typho and Padme get up after explosion and run.	Michelle for Padme Jai (real actor) for Typho	Ready to shoot at 10am. Jai needs sideburns shaved. Michelle may need hair pieces under helmet. Michelle's coat is 6am. Jai is 9:30am.
00D010	Obi walks into Dex's diner.	Kevin Wallace for Obi	Will need to get hair done. Shoot this after OCP. GVL wants to have Obi disappear through the doorway on the cut, so we have 85 stairs and platform.
TR5040	Jawas walk around by sandcrawlers - right shot	Jane and Alex Knall Cooper, Waddy, Jordan	Cannot shoot until after 2:30pm (school). Will probably take 45 min+ to get all costumes on the kids.
TAM290	Tusken riders run towards An to kill him.	6 Tusken Riders 3 men, 2 women, 1 child	TAM290 MUST MATCH TAM300 - It's An's POV shoot end of the day on Tuesday
Wednesday			
DJ78257	Obi uses the force to pull lightsaber towards him	n/a	Will need Nick Bagle. GVL thought the saber was too shiny; model shop will dull it down. We should light it accordingly.
DJ78332	Insert of lightsaber cut in half and rolling with smoke coming out of it.	n/a	Will need Nick Bagle and Geoff Haron. New cut lightsaber being built for this shot. Model shop will dull this down also.

"When Master Annie made me, he never quite found the time to give me any outer coverings. It's so humiliating. How would you like to go around with all your circuits showing?"

C-3PO



scenes 59 and 61-65, where most of the background would be CG or model shots.

Ewan McGregor We're just walking along blue screen with a blue curtain behind us, and then that'll be turned into some big room.

Usually when you make a film you shoot the movie, you cut the movie together, and what you shoot is what you've got to make the movie. What we're shooting here is the live action bits, which is the acting, that they need to put in the film that they've already planned and made on the computer. The acting is the bit that the camera can't create yet.

For Episode I the animatics were very basic blocks and shapes and they gave you a very rough idea of where we were going. In comparison, the animatics I've seen for this movie look pretty good and some of them could pass for final

Rob Coleman It's remarkable to watch George shoot because he shoots like no other director I've ever seen. George showed

Ewan concept paintings—"Okay, you're walking down a hallway and you're looking and seeing cloning facilities"—but there's nothing for him to see on set. It's very raw and it's very rough but George is getting the Obi-Wan element for the image.

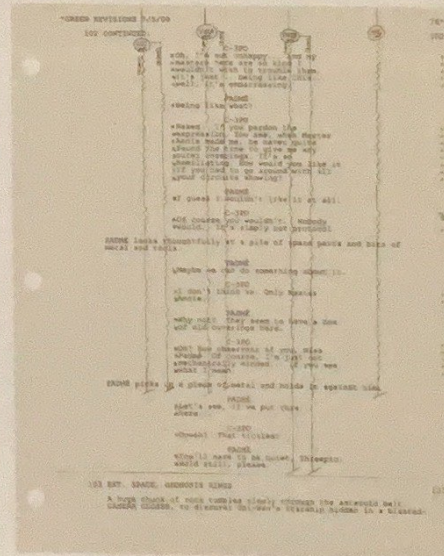
Ewan McGregor It is the weirdest job you'll ever do. There's nothing quite like doing this. It's very peculiar.

Keep Focused

Hayden Christensen My favorite set was definitely the nightclub. It's just really cool—high-tech bars with high-tech drinks, and really weird people walking around. It was hard to keep focused at times.

The scene set inside the Coruscant nightclub was shot on July 17. After crashing her speeder and running through the streets of Coruscant, Zam hides from Anakin and Obi-Wan inside a local bar.

Gavin Bocquet We asked George what he wanted it to be. Is it a very small bar? Jazz nightclub? Is it a rather grand, glitzy



place? Is it a warehouse type environment in the back streets? He felt it used to be a very glitzy place, but it's lost a bit of its former glory.

Peter Walpole/Set Decorator The nightclub was one of the biggest sets. It was fun. It's nice to have that scope when a lot of people think it is all digital or all blue screen. We bought a lot of stuff off the shelf like the bar stools. It was nice to have a little bit going on in the background, whether it be a roulette table or some gaming machines. We found a couple of old wrecked arcade games that were just a shell, so we turned them upside down and they took on a completely different appearance. George liked everything, but wanted us just to change the center bar slightly—he wanted acrylic tubes with liquid in, which had almost a church organ effect. That worked really well, and I wish I'd thought of it first, but, hey, that's probably why he's directing. There was a little bit of neon supplied by the art directors' construction, you fill the space full of extras, and you've got yourself a nightclub.

Anthony Daniels I have been in five *Star Wars* movies, but never as a person!





3.261

- 3.257 Padmé waits at the homestead while Anakin is searching for his mother. In the homestead garage, C-3PO reveals to Padmé that he is embarrassed about being naked, so she offers to cover him using spare parts and metal lying around. Anthony Daniels, dressed in black, is operating the C-3PO puppet from behind. The scene was not used in the final cut.
- 3.258 A proposed layout for the homestead garage set, which replicates the garage seen in *A New Hope*, when Luke sees Leia's hologram message for the first time.
- 3.259 Lined script showing the dialogue between C-3PO and Padmé as she adds the coverings to complete him. He is most grateful despite the process being somewhat ticklish.
- 3.260 Iain McAig's costume design for Padmé's desert nightgown (October 5, 1999).
- 3.261 Concept art by Ryan Church for the Tatooine speeder seen in the left alcove (January 23, 2001).
- 3.262 Ryan Church's concept for a T-16 skyhopper is based on the Colin Cantwell prototype model for *A New Hope* (January 23, 2001).



3.262



- 3.263 Jango Fett's Slave I closes in on Obi-Wan's starfighter during the asteroid chase sequence in an exhilarating composition created for publicity purposes.
- 3.264 Realizing that Obi-Wan has put a tracking device on Slave I, Jango and Bibi Fett navigates into an asteroid field and turn the tables on the Jedi.
- 3.265 In this final frame Jango attacks Obi-Wan with seismic charges.

- 3.266 Randy Gaul's concept art for Slave I inside an asteroid was approved by Lucas on April 24, 2001.
- 3.267 Temuera Morrison and Daniel Logan as father and son in the cockpit of Slave I.
- 3.268 Ewan McGregor waits patiently in the Jedi starfighter cockpit while adjustments are made. Only a minimal set has been built—the rest of the starfighter is covered in blue cloth and will be added in postproduction.

“George encourages us to push the state of the art, and he encourages us to have fun. There’s an asteroid sequence in which one of the asteroids is the shape of a shaak. You’ll have a very hard time seeing it unless you know it’s there. George thinks it’s very funny.”

Ben Snow / Visual Effects Supervisor

Don Bies We heard about this big nightclub scene. I was joking with Tony saying, “You should be in the film without a mask. You could ask George to let you have a little cameo.” He loved the idea, asked George, and he said he could do a featured extra role. Then my crew heard about it, so pretty soon the whole P2-D2/C-3PO crew was in it as well. Fortunately, because we knew the assistant directors and bribed them profusely, they put us in key positions where you could see us on camera.

Anthony Daniels And as we came in the actor playing the bartender said, “get these droids out of here!”

The interior scene was completed in one day, as well as the end of the speeder chase where Anakin falls from Zam’s speeder as it crashes on the street.

The speeder chase, scene 22, follows the assassination attempt on Padmé in her apartment. Obi-Wan and Anakin pursue the assailant Zam Wesell through the skies of Coruscant in speeders.

George Lucas Previously, we couldn’t even think about having a chase through a city because we had to do miniatures and stop motion, and now we can do things that were unthinkable before.

Shooting on scene 22 resumed on July 21 on Anakin’s speeder.

Ty Teiger / Property Master We got a carcass of a speeder from construction, then Peter Walpole and the model makers made everything inside it from the wall panels to the steering columns

to all the light panels, to dials, to the foot pedals, to the seats. Even though it doesn’t take off and fly everything has to be functional, so a lot of engineering goes into it. A lot of thought. A lot of time. And it looks fantastic.

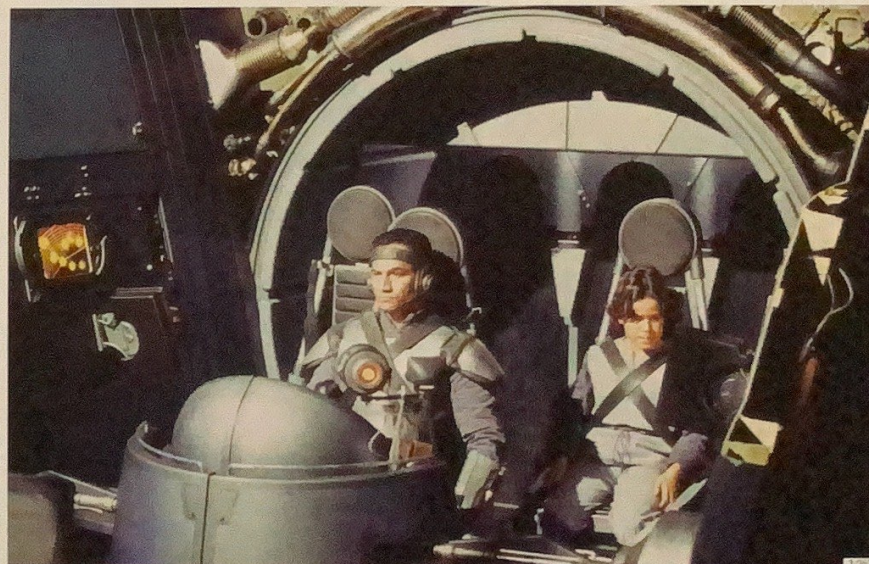
Rick McCallum We have the speeder on a gimbal surrounded by blue screen and we put huge plasma screens in front of the speeder so the actors can watch the animatics. They can understand and interact with what’s going on in this surreal blue screen world that they live in.

Hayden Christensen That was my first time in a speeder. It was lots of fun to press all those buttons.

Dave Young / Special Effects Supervisor The most challenging effect has been to build a flight simulator for the speeders. The flight simulator is multipurpose. It does six different rolls. It can fly both speeders (Anakin’s and Zam’s), and spaceships, and we can get animal motion control out of it for the arena scene. So it has a lot of purposes and we’ve managed to pull the whole rig together from the design stage to the finished product in about four and a half weeks.

On July 24, 25, and 28 shooting continued on both speeders. Anakin jumps from his speeder and lands on Zam’s speeder—Anakin is trying to get into the cockpit as Zam tries to shake him off.

Hayden Christensen I was being thrown around, trying to hold on to this thing and climbing all over it. I felt like a bit of an ass as I was doing it but they said it would all work out and I trust them.



Melodrama

Natalie Portman Episode I was setting up the characters and the situations for the next five films, so there wasn’t a lot of storyline for any of the characters beyond the action of the movie. Queen Amidala was a very mask-like character—she didn’t really have any dramatic relationships with other characters—so I had to internalize everything.

Here she’s found someone who changes her, and she changes from being a stolid queen figure to someone who is able to fall in love and open up and tell her life story. She can have fun and giggle and be a normal girl.

On July 19 Natalie Portman and Hayden Christensen played the love scene between Padmé and Anakin, set in the dining room of the Naboo retreat. Sitting opposite each other while eating dessert, Anakin uses the Force to take Padmé’s fruit, just as she is about to spear it with a fork.





3.270



3.271

- 3.269 Erik Tiemens's concept art for the Geonosis landing area showing the Trade Federation's enormous spherical Battleship Core command vessels peppered amidst the planet's rocky terrain (January 1, 2001).
- 3.270, 3.272 When Ohi-Wan lands on Geonosis he sees masses of droid troops land onto a core ship as designed by Erik Tiemens in a wide shot and close-up (both September 26, 2001).
- 3.271 Final frame of Slave I landing on Geonosis.







3.273 Preparing the set for Obi-Wan's starfighter landing on Geonosis. The starfighter is suspended from a rig while the crew shovels sand onto the floor of the stage.

3.274 As scripted and filmed Obi-Wan climbs the rock face and is confronted by a pair of maxiffs—dog-sized lizards with snarling fangs—as can be seen in Ed Naitved's concept art (April 26, 2000). Obi-Wan manages to dispatch both of them. Although originally conceived to be Geonosian creatures the maxiffs would eventually be seen on Tatooine fighting over a bone in the Tusken Raider camp.

3.275 Filming Ewan McGregor on the Geonosian rock face trail with the Sony HDW-900 digital camera. Throughout the shoot and reshoots a running total was made of the number of Sony HD tapes recorded and the amount of 35 mm film stock exposed. The film stock remained at zero throughout.

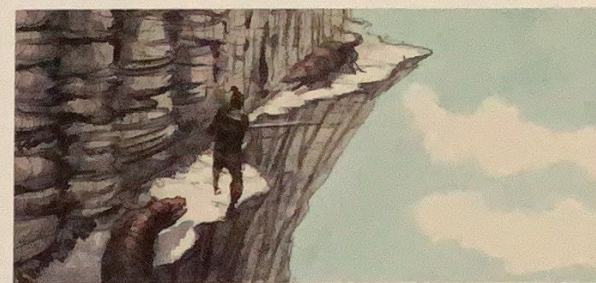
3.276 There were several ideas for Geonosian structures. This Doug Chiang concept resembles a termite mound (November 29, 1999).

Natalie Portman He's trying to show off to her by using his Jedi tricks.

Afterward, Padmé and Anakin sit close together in an alcove.

Hayden Christensen Anakin feels passionate for Padmé but at the same time he's intent on becoming the best Jedi that he can. He understands that as a Jedi he's not supposed to fall in love in a romantic sense. Those conflicting desires root his anxiety in this film.

I think maybe that startles Padmé at first, and causes her to back off a little bit. Throughout the film they're put in these very extreme settings. They're in hiding—they spend a lot of time in a lakeside palace or in grassy fields—and it's really conducive to two people finding very passionate emotions for each other, even though they both understand that maybe they shouldn't.



3.274

Natalie Portman Padmé doesn't want to fall in love with Anakin because she has, as she says, more important things to do than fall in love. She sees a future for herself as a leader helping people and as someone who can change things for the better in a youthful, idealistic way. She doesn't really think that putting herself first and giving into her love is the right thing for her to do for her people.

Hayden Christensen Padmé is able to resist her temptations, which probably attracts Anakin that much more because she is so strong-willed. That struggle continues throughout the film until near the end where they're able to express how they really feel for the first time.

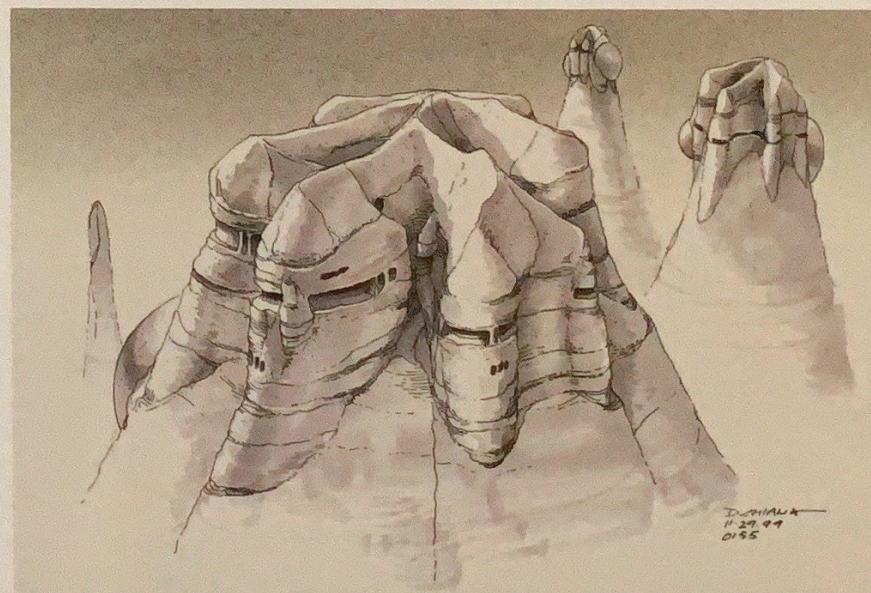
George Lucas Let's face it, their dialogue in that scene is pretty corny. It is presented very honestly. It isn't tongue in cheek at all, and it's played to the hilt. But it is consistent, not only with the rest of the movie, but with the overall *Star Wars* style. Most people don't understand the style of *Star Wars*. They don't get

that there is an underlying motif that is very much like a 1930s Western or Saturday matinee serial. It's in the more romantic period of making movies and adventure films. And this film is even more of a melodrama than the others.

Cajoling

George Lucas Yoda and some of the other senior council members train young Jedi up until the age of 10, and then at 10 they are turned over to their mentor, their Master Jedi. And from then on the Master Jedi tutors them.

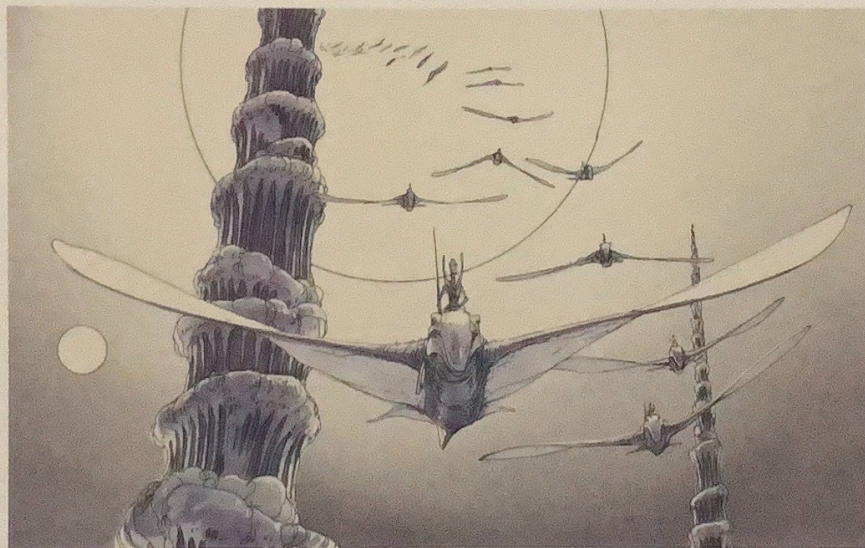
The scene set on the Jedi Temple veranda, where Obi-Wan interrupts Yoda's training session for the younglings to inquire about the planet missing from the archive maps, was filmed on July 20. The casting call for the younglings took place on July 7.



3.276

“George was very fond of the original Neimoidian head design, before it became a costumed mask on a person. Basically I took the head from the original Neimoidian design and put it on a different body for the rock creatures.”

Doug Chiang



- 3.277 The Geonosians are rocklike insect figures with short wings that allow limited flight. Doug Chiang's concept was to give Geonosian warriors winged creatures to ride, but this design was transferred to the Kaminoans (January 26, 2000).
- 3.278 Terry Whillatch's concept for a "Stalgite dweller" is an angular design with large bat-like wings (September 14, 1999).
- 3.279 Glen McIntosh's family of Geonosians shows the different generations and how they fly.

Ros Breden / Extras Casting The casting of the young Jedi was probably the biggest casting session that I did because we needed to find children that looked the same, identical twins if we could find them, so that we could use half of them in the four-hour morning shoot and half of them in the four-hour afternoon shoot.

The first casting session had about 60 children and we took them over the street where stunt coordinator Nick Gillard ran them through some basic Jedi moves. From that we chose 27 children.

Nick Gillard All the kids were so great it was hard to turn any of them down.

Ewan McGregor They were very good. They all stood on their spots, didn't move about. Ahmed Best helped them to keep in line and he was just fantastic with them.

Daily Production Report / July 20, 2000 Jedi children extras on four-hour calls, completed work as scheduled however required some cajoling to remove costumes.

Half-Built

Rick McCallum We had 12 stages in Sydney, and every single one of them had at least one set. But *Star Wars* is so plot based, we were quickly moving to another stage, sometimes every day. It would take six to eight weeks to build a set, we'd shoot on it maybe two or three days, then we're gone. We had to strike the set that night and start building the new one. Often we didn't have the studio space to build a set so we had to build models instead. We used models a lot and the model shop was still huge through to Episode III.

Paul Duncan Who decided whether or not to use a model?

Rick McCallum George and I—we made every decision together. We'd meet at breakfast or lunch, and I'd say, "Look, there's no way we can strike Stage 10 and then build this in time.

Is it really worth it to spend six weeks building a set for half a page of dialogue?"

Paul Duncan The Jedi Library scene was scripted at two and a half pages in length.

Rick McCallum In that case the set was half-built with a green screen backing, then a very detailed model was built over months by ILM, and they are digitally composited together. It's not that you save a lot of money building the models because we only had a limited number of artists who have the engineering capabilities and the artistic sensibility to build the models, but in this case we saved production time by not building a very complex and detailed library set.

The Jedi Temple Library scene was shot and completed on August 1.





FAMILY

Glen McIntosh 1329

“I was enthusiastic to sink my teeth into organic forms for Geonosis, and was intrigued with this notion of melding termite mounds with Art Nouveau, Josep Maria Jujol, and Antoni Gaudí to create something eccentric, asymmetrical, and naturalistic.”

Erik Tiemens





Clean Plate

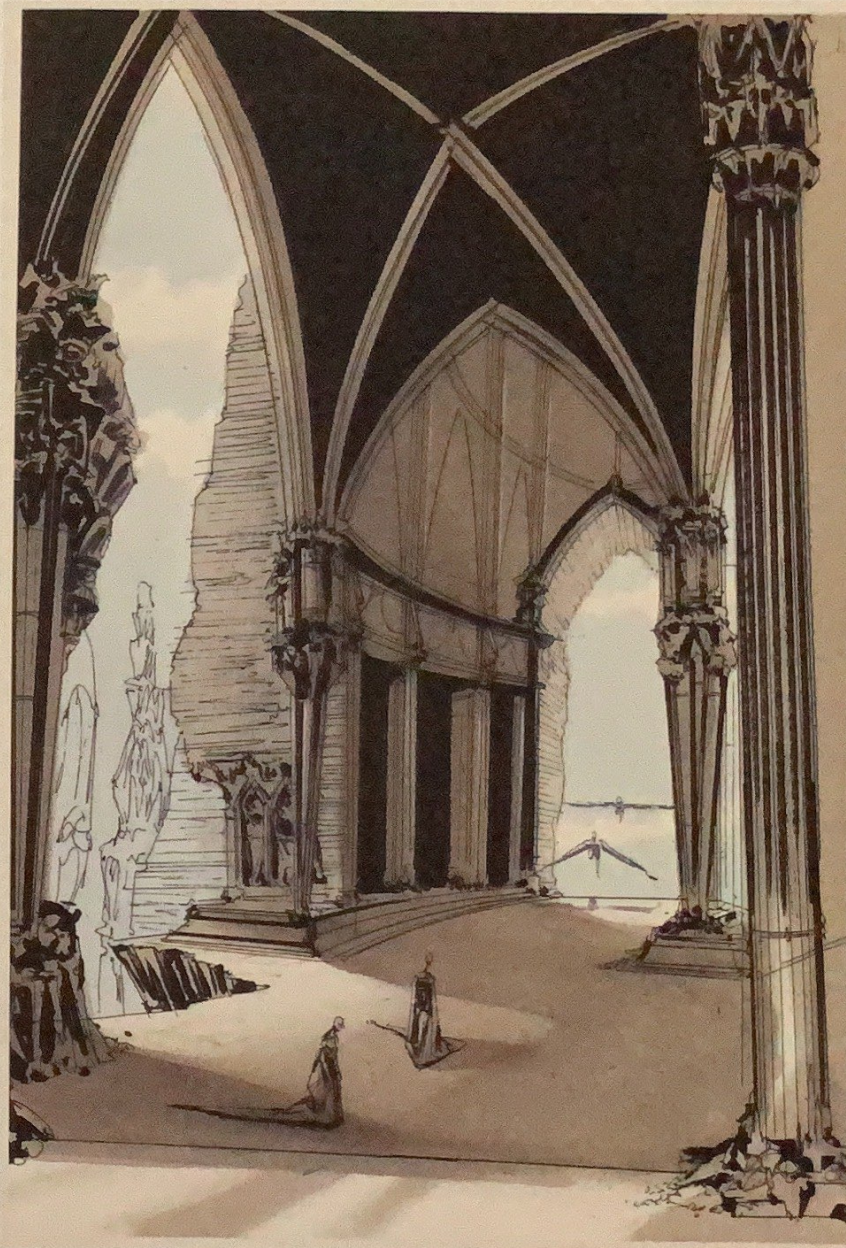
The Dex's Diner scene was shot on August 7. Obi-Wan visits his old friend Dexter Jettster to ask if he can identify the source of the dart that killed Zam.

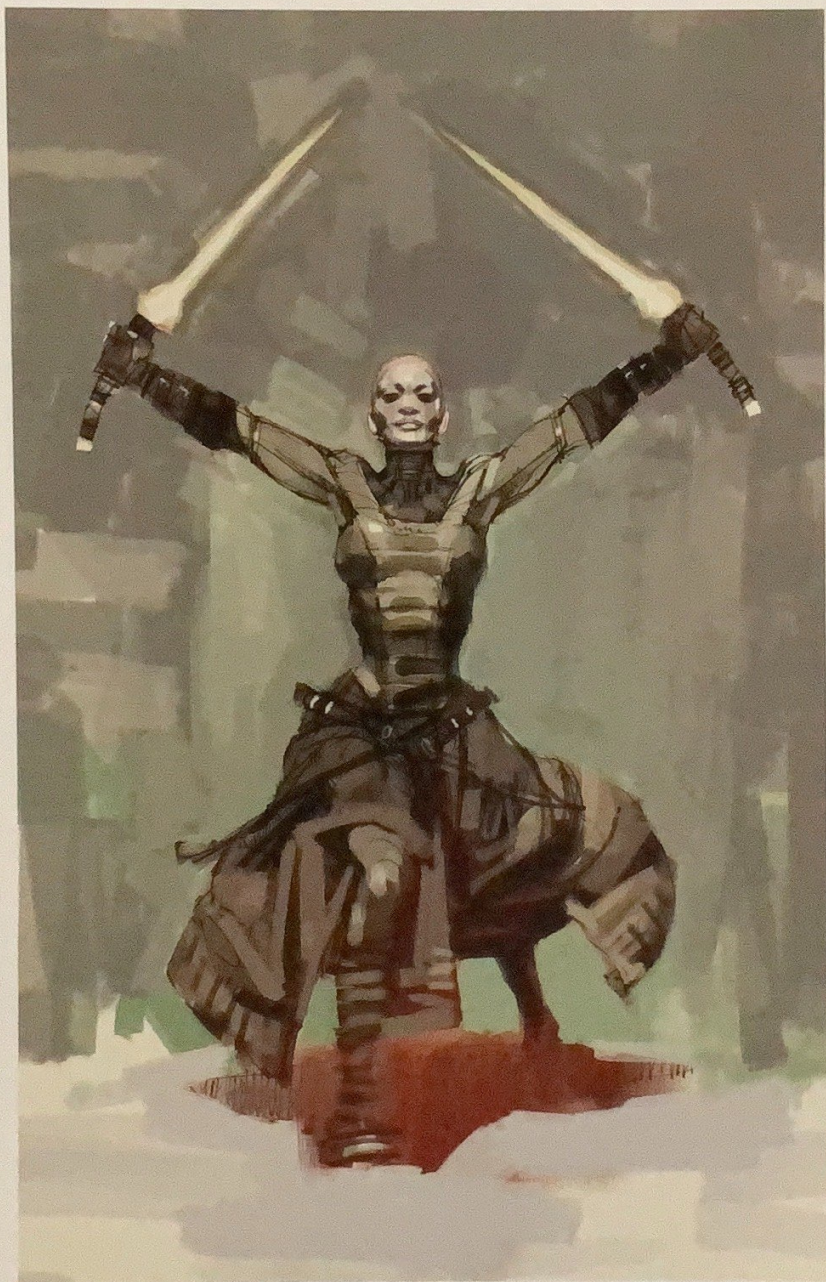
George Lucas We always try and have the voice actor on set, doing the dialogue and playing the part. We shoot a couple of takes with the actor in the scene, and then we do a bunch of takes without the actor to give us a clean plate.

Rob Coleman I need to know if the digital character is going to hug the live-action character? If they are, we need to pay attention to what's going on. Or if they're handing a cup to them, or where they're sitting, and the timings of what's happening. When Dexter's sitting in the diner, if he slaps a table or drinks a cup of coffee, we need beats or periods of time when Ewan leans back and is watching a character that isn't there acting. Ewan has the benefit of the voice actor, and when we were shooting that sequence I would say to George that's really great, I loved that he put that into the animated character.

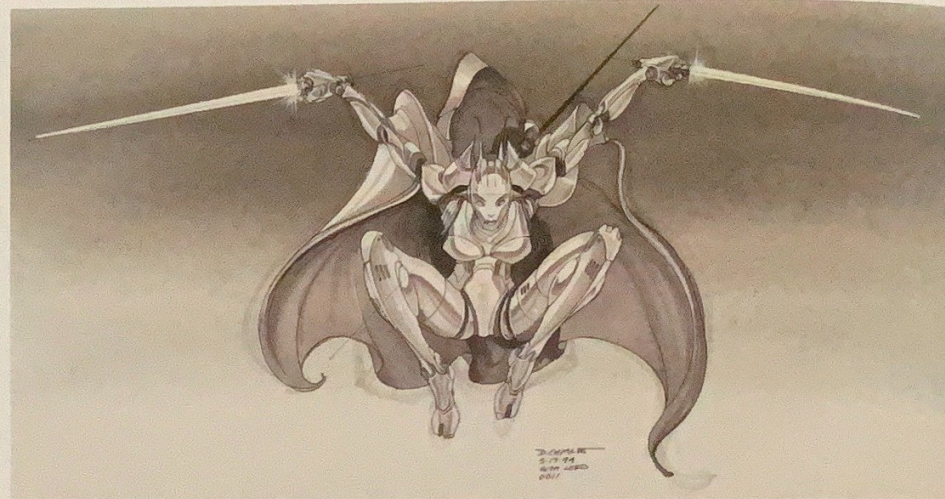
George Lucas I kept the positions of all the CG characters in my head while I was shooting. There was a waitress moving through the scene and sometimes, to help us keep things straight, we'd use a real waitress, even though we thought she might be replaced with a CG robot.

- 3.280 Ryan Church's concept for the Geonosian interiors (April 16, 2001). The Trade Federation dignitaries, led by Count Dooku, pass through a hallway that has a cathedral-like structure with stalagmites. Lucas described the architecture in the script as having "immense pillars, Gaudi-Gothic arches, vaulted roofs."
- 3.281 Lucas directs Ewan McGregor as Obi-Wan spies on the activities of the Separatists.
- 3.282 Ed Natividad's concept for the interior of the Geonosians' stalagmites has a complex network of pathways that are easier to negotiate if you have wings (October 27, 1999). The design also echoes the assembly lines in the droid factory.
- 3.283 This Ed Natividad design presents the interior of the Geonosians' lair as being carved with a high degree of control, in contrast to the organic nature of the exterior (September 15, 1999).





3.284



3.285

3.284-285 The Sith Lord was originally conceived as a female warrior with two lightsabers, as can be seen in these concepts by Dermot Power (September 1, 1999) and Doug Chiang (May 17, 1999).

3.286-291 A plethora of designs by Iain McCaig (December 20, June 3, June 9, May 12, September 24, June 4, 1999).



3.286

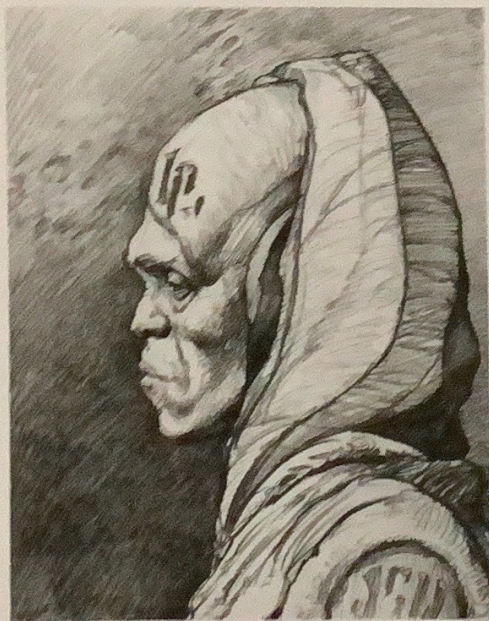
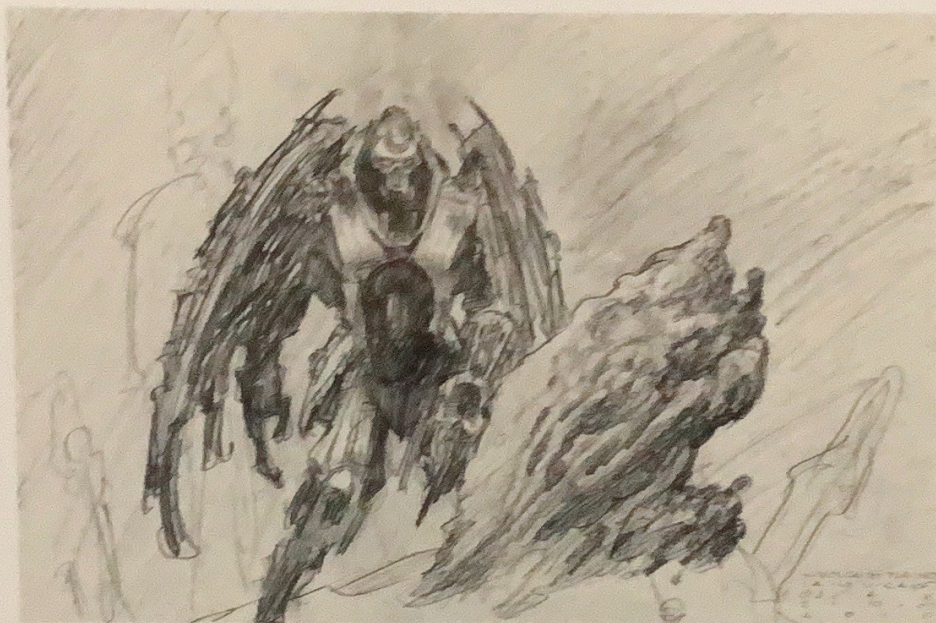


3.287

"I felt this was a great opportunity to introduce a strong woman character, to give girl fans an icon. The challenge was finding a new archetype that would stand up there with Darth Vader and Darth Maul."

Iain McCaig

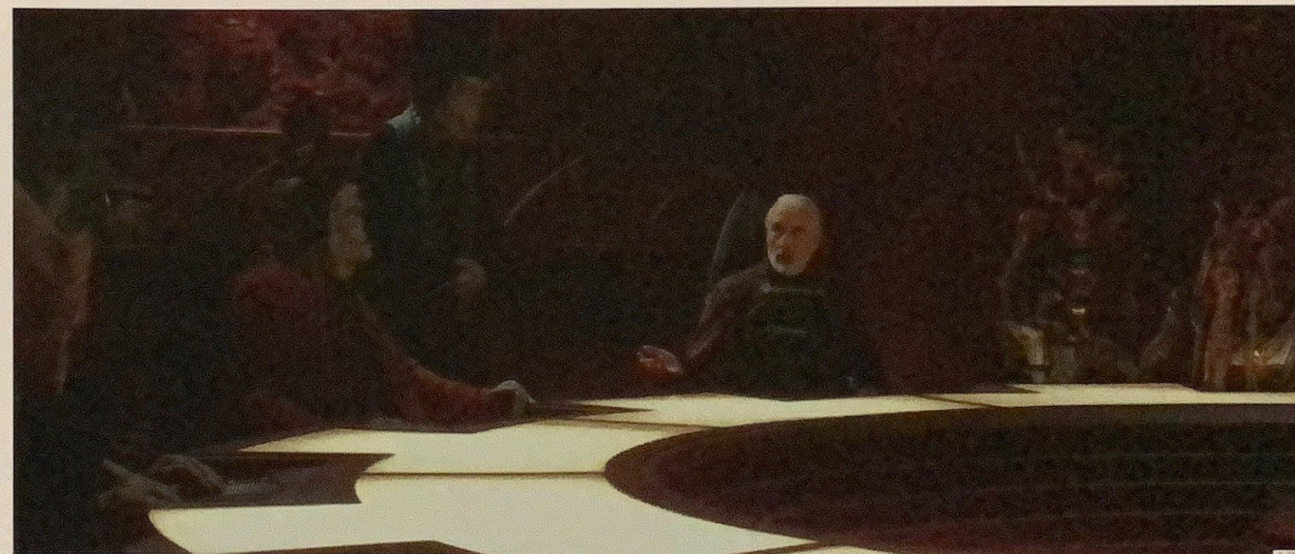




"I was looking for a villain...who was more elegant and sinister than scary. He's a more sophisticated kind of villain."

George Lucas

- 3.292 Iain McCaig presented further designs for a male Sith Lord. This concept looks like a mechanical creature forged on a lava planet (February 10, 2000).
- 3.293-295 Another idea for Count Dooku, as the character became known, was for him to be cloaked, which can be seen in these Iain McCaig concepts (June 15, 1999; March 3, 2000; November 5, 1999).
- 3.296 Sculptor Mike Murnane's concept for Wat Tambor, foreman of the Techno Union, was painted in multiple colors for Lucas to decide upon the most appropriate in relation to the other characters (September 29, 2000). Murnane: "Wat Tambor has the quality of Flash Gordon and Art Deco, a character formed of simple shapes that relate to each other."
- 3.297 Lucas eventually decided that Count Dooku would be an elderly former Jedi and Christopher Lee was cast in the part. This final frame shows Count Dooku persuading the Separatists to combine forces and lead an attack against the Republic. Nute Gunray (Silas Carson) is particularly keen to ensure the demise of the senator from Naboo.
- 3.298 Lucas directs Silas Carson as Nute Gunray, while Gunray's face is being remotely operated by Matt Sloan.



Swashbuckling

Natalie Portman Working in front of a blue screen is the hardest kind of acting because everything is in your imagination. On stage you can let yourself go because you've got the set, the costumes, the actors, you're working in sequence and it's very easy to feel the situation. In front of a blue screen you have to imagine the setting around you, sometimes even characters, and it's a very different skill.

The scenes set in the Geonosis Arena, where Anakin, Padmé, and Obi-Wan are to be executed, were filmed from August 10 over five days. They began on Stage 1 with Anakin and Padmé riding the reek, and then moved to Stage 3 where they are chained to the poles, and Padmé climbs on top of a pole to fight with a nexu.

Nick Gillard Natalie has to do a few stunts. She's chained to a post along with Anakin and Obi-Wan, and they let in three

big monsters that are going to tear them up. Natalie makes a good account of herself.

Natalie Portman I was really excited to fight alongside the Jedi because in the first one I didn't really get much to do. I told George I don't just want to be the girl getting saved by the guys.

It's much better in this one. A lot of the stunts deal with running from and fighting with imaginary creatures, which was somewhat amusing. Everything is blue and cushiony, so when you fell it wasn't painful.

Rob Coleman I had hundreds of questions for George. Since I couldn't get more than a couple of minutes with him at any time I started feeding him questions in order of priority:

How do the arena creatures move?

Are they slow? Are they fast?

Do they stomp? Do they move around?

I would make notes of his replies and then phone or e-mail ILM.



***"The tendency should be to ground a concept in reality.
The nomadic women of Iraq wear heavily jeweled outfits
and cover their faces with veils. I replaced the veils
with simple metal parts, as if they'd been scavenged."***

Dermot Power / Concept Artist



- 3.299 Several sets under construction on Stage 3 at Fox Studios Australia in Sydney. At the front is the Tusken Raider camp set, with one of the tents open so that it can also be used as an interior set. The tents are designed to look like bantha horns bound together and covered with a protective mud barrier. On the left is the set for the Geonaxian rock face, where Obi-Wan lands and begins climbing. To the rear, rock steps, nooks, and crannies are being assembled—Obi-Wan will use these to sneak around the Geonaxian structure and spy on Count Dooku and the Separatists.
- 3.300 Dermot Power's costume design for a "Sand Woman"—a female Tusken Raider (May 19, 2000). The clothes are designed to minimize the impact from sandstorms.
- 3.301 Final frame of Anakin observing the moonlit Tusken Raider camp where he hopes he will find and rescue his mother. The live-action plate was shot in Tucson on September 10, 2000.
- 3.302 Marc Cabanana's concept for the Tusken Raider camp—they use the natural rock formations of the Tatooine environment for shelter (May 1, 2000). Banthas can be seen in the background.
- 3.303 Final frame of the Tusken Raider camp with muskiffs.





B.302

Scenes of the Jedi fighting, as well as Mace Windu battling and decapitating Jango Fett continued on Stage 3, with August 14 seeing 71 setups completed in a single day.

George Lucas This is the golden age of the Jedi, but not all Jedi fight exactly alike.

Hayden Christensen Nick Gillard creates a unique fighting style for each of the Jedi. It reveals a certain element of their personality.

Nick Gillard If there's a similarity in the way the Jedi fight, it's that they're never exposed. They can always attack or defend. But their styles are going to vary. You know how the *dan* system works in martial arts? If you become a black belt, you become a first *dan*, second *dan*, et cetera. Once you get past fifth, you're then into your own style. And the Jedi are a million light-years beyond that. So you'll see differences.

Ewan McGregor I didn't really notice until I was on set fighting with the others, but Obi-Wan is straight to the point, while Anakin's got more youthful vigor to him.

Nick Gillard I've always said to Ewan McGregor that if he doesn't make it in acting he can come and work for me because he has extraordinary balance and hand-eye coordination. He's only been in three or four times, but you could already shoot his fights.

Anakin's the Chosen One, so the audience will want to see that manifest itself. There needs to be flashes of brilliance. He's more skilled than Obi-Wan. Anakin always attacks. He's better and he knows it, which means he's brash on occasion.



B.301

I've spent four weeks training with Hayden. He's fantastic. Hayden and Ewan will both be doing all of their own stunts and sword fighting.

Hayden Christensen Nick brings a story arc to the fights, so if you watch closely the fights become their own character. That's all a credit to Nick. He makes the rehearsals lots of fun, too.

Nick Gillard I started writing these lightsaber fights when I was still doing the last film. You have to start out with more than you need, and then hone it down. It's a long process and not just for the actors to get the moves, but for them to keep their character through it. So they have as much input as anybody else does.

Samuel L. Jackson I look at these films as the swashbuckling adventures of the modern era.

Nick Gillard Mace Windu fights the bounty hunter Jango Fett. We've not seen Mace fight yet, but we know that he's second only to Yoda. I was thinking about a style for him, but it's Sam

Jackson's style—he has so much style of his own there's very little that you have to do.

Samuel L. Jackson I'm a fan of Japanese samurai movies and I've watched a lot of kendo fights, so that's Mace's style of fighting. I'm doing pretty good at it but the feet have to be right so that the strikes look correct, so it's a lot like dance choreography. Since I'm supposedly the second-baddest person in the universe, I'm pretty efficient. I don't do a lot of fancy sword twirling or anything. I dispense people pretty quickly, use as little energy as possible.

My fight with Jango is a combination of him trying to escape and me trying to stop him. So there are a few elements, of him flying around, shooting projectiles at me, me defending myself and then going on the offensive. And once that happens he's pretty much toast.

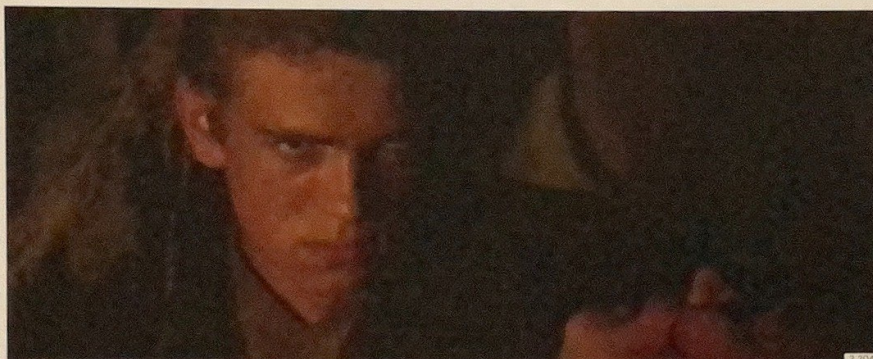
Hayden Christensen When I was a kid I used a stick in my yard and pretended it was a lightsaber. I would make all these noises. So on the set, I was making those swooshing sounds



B.303

“Pain, suffering, death, I fear. Something terrible has happened. Young Skywalker is in pain, terrible pain.”

Yoda

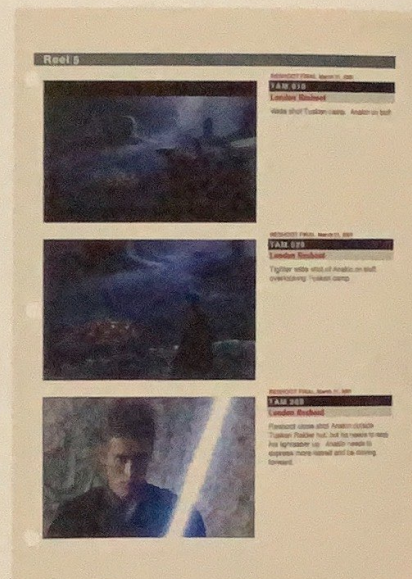
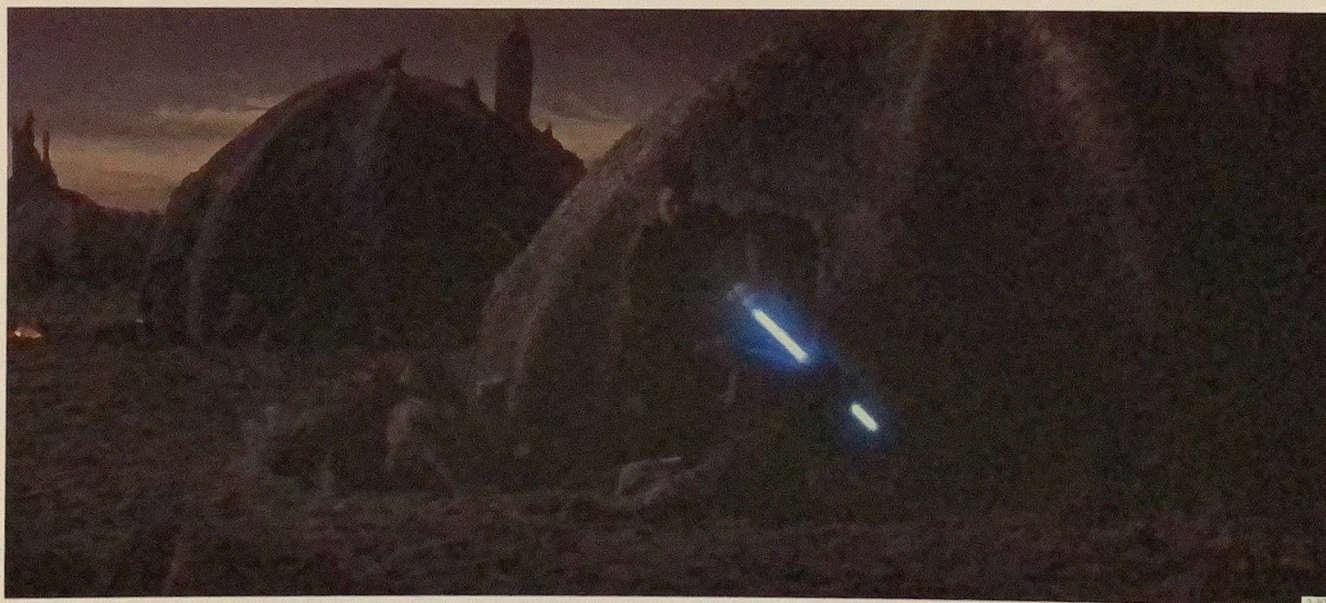


and mouthing the noises. George finally stopped me and said, “Hayden, you can stop making those noises now. We actually have the money to put them in during postproduction.”

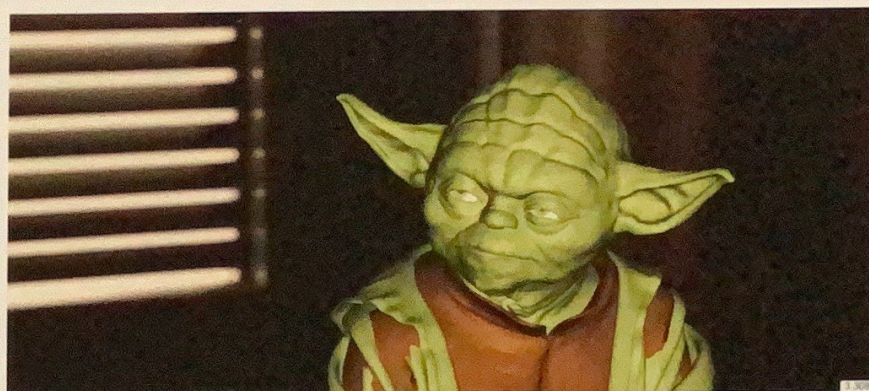
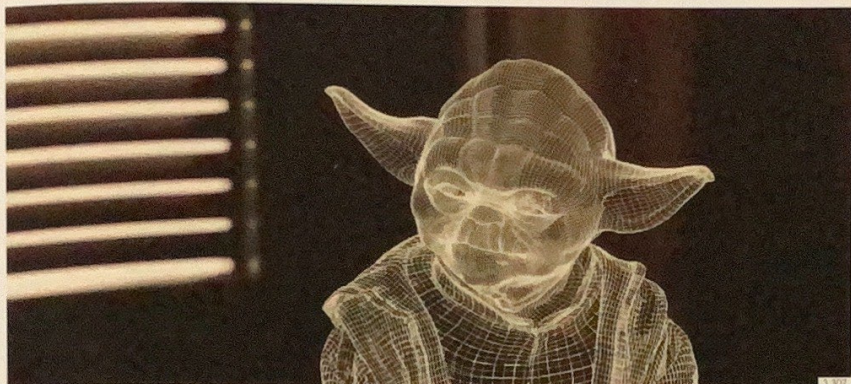
Battle-Scarred

Christopher Lee All I know about Count Dooku’s background is that he’s a Jedi and, as George said to me, a battle-scarred Jedi.

He’s a very inflexible character. He doesn’t show emotion. He is very cold, very contained. He’s very aloof, obviously completely fearless. He is extremely intelligent, perhaps more so than almost anyone else. He is very much a force unto himself, if I can use that phrase, and obviously he’s not a particularly friendly character—he’s not the person that you would invite to dinner. I don’t think. He’s obviously a man of

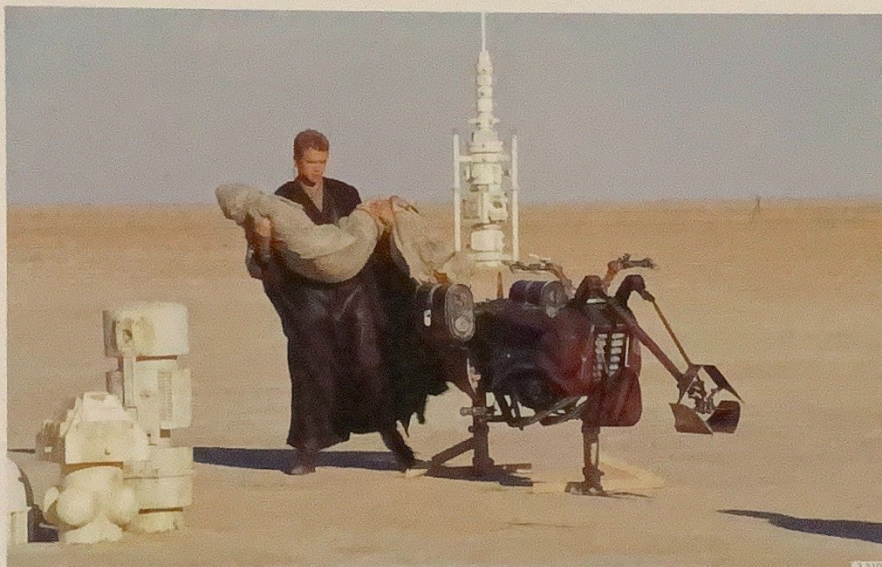


- 3.304 In this final frame Anakin cradles his dead mother (Perilla August) in his arms. Grief turns to anger.
- 3.305 Final frame showing Anakin slaughter the Tusken Raiders. No one is spared.
- 3.306 Shot information sheet for the reshoot at Ealing Studios, London on April 4, 2001. For shot TAJ 306: “Anakin needs to express more hatred and to be moving forward.” It must be clear to the audience that in this critical moment Anakin’s shift to the dark side has begun.
- 3.307 Wireframe model of the fully CG Yoda.
- 3.308 Interim computer realization of Yoda axed for low-resolution animation in the Carri software—it shows a basic outline and initial color scheme but lacks detail and texture.
- 3.309 Final frame of the CG Yoda fully rendered with hair and fabric detail that is consistent with the original puppet. Yoda has felt a disturbance in the force following Anakin’s slaughter of the sand people and informs Mace Windu.



"I...I killed them. I killed them all. They're dead, every single one of them. And not just the men...the women and children too. They're like animals, and I slaughtered them like animals...I hate them!"

Anakin Skywalker



3.310

immense power, mental power and physical power. The latter of course is shown very much in this tremendous lightsaber fight. He is the greatest swordsman in the galaxy, which he has to show during the course of this enormous contest that he has with three different characters. He fights Anakin, he fights Obi-Wan Kenobi, and he fights Yoda. And then he gets away. He gets away in the end and reports back to, as he says, "my master," the Emperor.

But as a result of what he has done, what he has achieved, a war has begun, which is what they're aiming for—the ultimate destruction of the Jedi, and the complete imposition of their rule.

Dooku tries to flee the battle of Geonosis but is confronted by Anakin and Obi-Wan in his secret hangar. The fight scene was shot from August 21 to 23.

Christopher Lee It'll look as if it's I, the actor Christopher Lee playing the part of Count Dooku, who is involved in one of

the greatest fights ever seen on the screen. I hate to disillusion people but I have to be truthful about this. I'm involved personally very little. I think people realize that somebody in their 79th year is not going to be able to do this.

Nick Gillard Christopher isn't as young as he used to be, and obviously wouldn't be expected to leap around off air ramps and mini trampolines waving a sword, so Kyle Rowling will double for him. We'll also scan Christopher's face and superimpose it onto the double's face for some of the more complicated sequences.

George Lucas One of the advantages I have with Christopher is he is a great swordsman. He is very capable of and very knowledgeable in fencing. Although we use stunt doubles and digital doubles, Christopher's able to play the close-ups and some of the wider shots.

Christopher Lee This movie, in some respects, is more difficult to play because you don't know what is in front of you in the scene. But it comes down to performance, performance,

performance. You have to have a very vivid imagination. If you have that as an actor anyway, it's a help. You've got to make the audience believe what you're saying is true and what you're doing could happen. It's a terrific challenge. It's an even bigger challenge when, in a sense, they know it can't.

George Lucas I wanted to make it a different sword fight than the one that was in *The Phantom Menace* and I'm trying to evolve the sword fights so they're not all exactly the same.

Despite his power, Anakin is outmatched and overpowered by Dooku, losing his right arm.

Obi-Wan Kenobi is also no match for Dooku.

Ty Teiger It was Dermot Power's idea for Dooku to have this rapier-type lightsaber with a guard on it.

Dermot Power For the Sith's lightsaber I deliberately curved it—I wanted something exotic, almost Arabic.

Ty Teiger I've got a lightsaber standby team—four guys constantly churning out lightsabers—because we're going through 40 a day. We've got short stunt lightsabers as well as the long lightsabers. The lightsabers are aluminum rods, and even though they're durable once the actors start thrashing it out they bend within seconds. Once they bend they're no good, so you have to replace them every five minutes.

The climax of the battle pits Count Dooku against Yoda.



THC 340

3.310 Hayden Christensen as Anakin returns to the moisture farm bearing the shrouded corpse of his mother, Shmi.

3.311 In this final frame Anakin admits to Padmé that he took terrible revenge upon the Tusken Raiders.

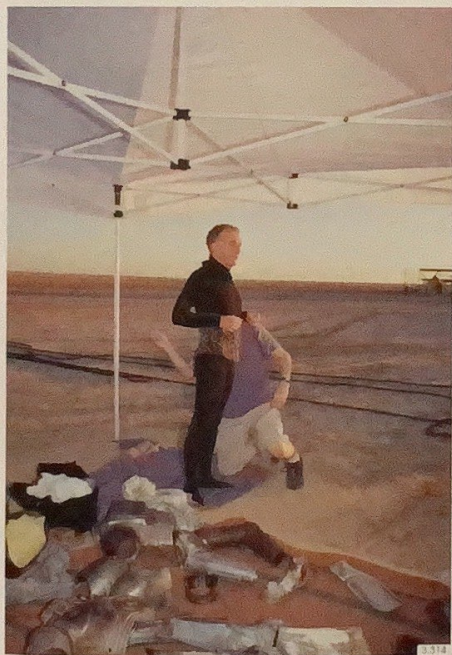
3.312 Previsualization storyboard for shot THC 340 depicting Anakin and Padmé in the moisture farm garage, with Ryan Church's art for the speeder and skyhopper in the background. Anakin shifts the blame for his actions: "It's all Obi-Wan's fault. He's jealous! He's holding me back!"

3.313 Final frame as Anakin buries his mother. He declares that he wasn't strong enough to save her and promises never to fail again.

3.314 Anthony Daniels preparing to snit up as C-3PO. Daniels: "24 years ago I vowed never to return to this awful planet. And here I am, doing it again."

3.315 C-3PO, Padmé, Anakin, and the Lars family gather to pay their respects to Shmi at the homestead graveyard.

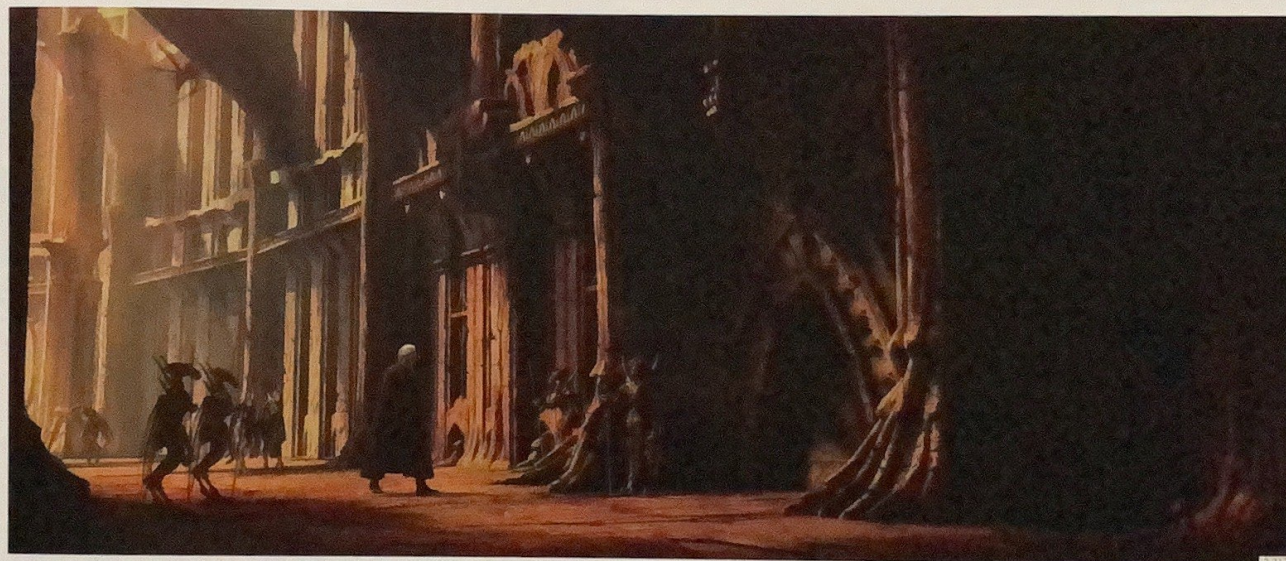




“Hundreds of senators have fallen under the influence of a Sith Lord called Darth Sidious. Even the Supreme Chancellor Palpatine is taking orders from this Dark Lord.”

Count Dooku

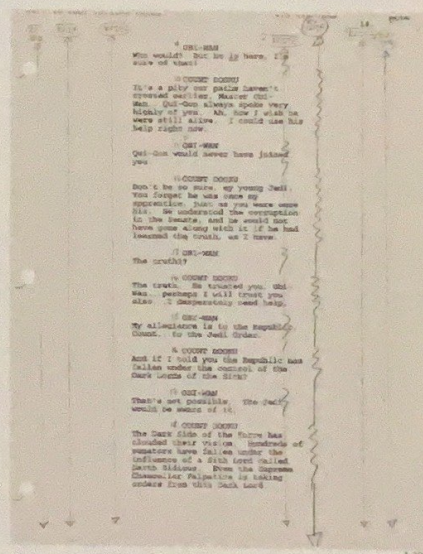




- 3.316 Obi-Wan reports that the Trade Federation were behind the assassination attempt on Senator Amidala and that they are taking delivery of a droid army. Before he can complete his report, Obi-Wan is attacked and captured.
- 3.317 Final frame of Count Dooku striding through the Geonosis corridors to talk with the imprisoned Obi-Wan.
- 3.318 Count Dooku tries to persuade Obi-Wan to join him and his cause—he reveals that the Senate is corrupt, that a Sith Lord, Darth Sidious, controls hundreds of senators. Obi-Wan rejects the offer, and reluctantly Dooku thinks it may be difficult to secure the Jedi's release.
- 3.319 Ed Natividad's concept for Poggle the Lesser interrogating Obi-Wan in the throne room (May 22, 2000).



- 3.320 In the shooting script Obi-Wan is captured and does not appear again until we see him in the execution arena. Meanwhile Padmé and Anakin arrived on Geonosis, are caught and interrogated, then tried. The script was rewritten to remove Padmé and Anakin's interrogation by Dooku, replacing it with a scene where Dooku interrogates Obi-Wan. This script page was faxed on March 18, 2001, and filmed on April 5 at Ealing Studios, London.





3.321 Final frame of the exterior of the Senate building on Coruscant.

3.322 Yoda and Mace Windu observe proceedings inside the Senate Chamber as the senators give emergency powers to Senator Palpatine. Mace decides to head to Geonosis, while Yoda declares that he will visit Kamino and see the clone army for himself.

3.323 Daily Progress Report for Monday, June 26, 2000, the first day of shooting. On that day Ian McDiarmid, Ahmed Best, and David Bowers were filming scenes 5 and 135 set in the Senate Chamber. The other actors were called for makeup tests or costume fittings.

3.324 Final frame of Palpatine "reluctantly" accepting absolute power in the Senate. His first act is to create a grand army of the Republic.

3.325 Jar Jar has been convinced to propose to the Senator that Palpatine he gives emergency powers. Here Ahmed Best, wearing the Jar Jar headpiece, is holding up the silver ball that H.M. use as a lighting reference.

3.326 Filming the central podium within the Senate Chamber. Ian McDiarmid (as Palpatine) is flanked by Sandi Finlay (as Sly Moore, front) and David Bowers (as Mas Amedda).

Lucas shot the wedding scene that concludes the movie—Padmé and Anakin acknowledge their love for each other and secretly marry. He also shot the scene where Anakin awakes from a nightmare and explains to Padmé that he fears his mother is in great pain, and he must go to her. In sympathy, Padmé insists that she journeys with him to Tatooine so that he will not be disobeying his mandate to protect her.

The production moved to Caserta, and on September 5 shot the scene in the Naboo Palace where Padmé reports to Queen Jamillia. Next, the unit traveled to Tozeur in Tunisia for the scenes set on Tatooine.

George Lucas I've always felt at home in the desert, so it's easy for me to work there, and I've worked there a lot. Even though it gets up to 135, 140 degrees, I'm used to it.

On September 7 Lucas shot the scenes of Anakin looking for his mother, as well as the exteriors of the Lars homestead.



George Lucas The homestead out on the lake had been run down over the last 20 years but it didn't take much to put that right. It's the iconic set of the whole series. The kids were excited because this is what they remembered *Star Wars* to be. For me, it was a nostalgic trip to the past. Standing out there, it was like no time had passed at all.

Lucas took advantage of the location to film the final scene for Episode III where baby Luke is handed over to Owen and Beru.

George Lucas It means I don't have to come back here. It's a long way to come and bring a crew of 60 people to rebuild the set and shoot just one shot.

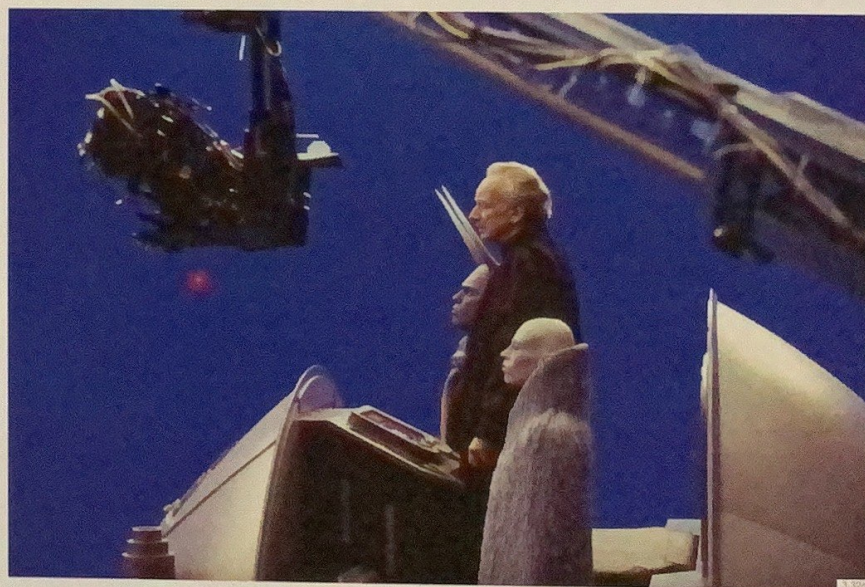
Natalie Portman and other crew were delayed while traveling to the location, so the following day was declared a rest day and shooting resumed at the homestead on September 9.

Anthony Daniels operated the puppet C-3PO for the arrival of Anakin and Padmé, and then donned the full suit when they are all at Shmi's grave.

The Mos Espa scenes were shot the following day, where Watto informs Anakin that Shmi had been sold to Clegggs Lars. On September 11 the team moved to Matmata to film the scenes set in the homestead courtyard where Anakin meets Owen and Beru, and learns of the fate of Shmi.

George Lucas A lot of locations hadn't changed at all. The Sidi Driss hotel, which we use as the homestead, actually repainted it for us when they heard that we were coming back, so we had to age it back down again. They even left a lot of our props there.

After a rest day, production moved to Seville, Spain, the setting for the palace grand courtyard where Anakin, Padmé, and R2 arrive on Naboo. Four days of shooting at Elstree Studio in England





- 3.327 Doug Chiang's concept art shows Padmé's ship landing on a flat stagelike on Geonosis (January 18, 2000). In the movie the ship descends into an exhaust vent.
- 3.328 The shooting script for scenes 142 and 143, filmed on August 19, 2000, recounts Padmé and Anakin's arrival on Geonosis: "They start forward. As they pass, the surface of the pillars seems to pulse slowly and move. High above, winged creatures grope from the pillars and detach themselves. They are then captured and move. In the count down. A new action sequence was devised and in the final Dooku scene, and this was filmed during reshoots. This production report for March 25, 2001, specifies that an astonishing 63 setups were filmed in one day, the majority of them for scene 142 with reference numbers G.P. (Geonosis (City Padmé))."
- 3.329-336 One idea for the action sequence, shown in these storyboards by Brian O'Connell, was for Padmé and Anakin to explore the corridors as they attempt to locate Obi-Wan, seeing across a gaping chasm—echoing Luke and Leia in *A New Hope*—and then Anakin dispatches a couple of Geonosians in the darkness.

(September 15, 18-20) concluded the first phase of film production with scenes set on Geonosis, including the arena battle sequence, and the Coruscant Senate building. The main unit wrapped at lunchtime on September 20, after 61 shooting days, a day and a half under schedule.

George Lucas We came in under schedule because we were able to shoot more setups a day with digital than what we were able to shoot on film, even though it was the first time we'd ever used digital cameras and the crew was learning how to make the cameras work.

Rick McCallum For weeks we shot in torrential rains on the Kamino set and in deserts that were over 130 degrees. I've always had a camera engineer on every film we've shot on

rough locations, I've had to. On Episode 1, which was shot on film, I had a camera engineer rebuild the cameras every night in Tunisia.

The body of the Sony HDW-F900 was based on the Digital Betacam, one of the most successful cameras that Sony has ever built. There are roughly 6,000 of them out there, so they are proven and tested. We didn't have one single problem with the HDW-F900, which I've never been able to say on any traditional film shoot.

Constant Manipulation

George Lucas Filming is interesting, but all I'm doing is gathering a lot of material so I can go in the editing room and have a good

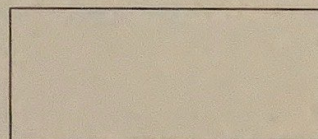
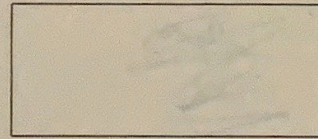
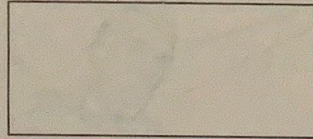
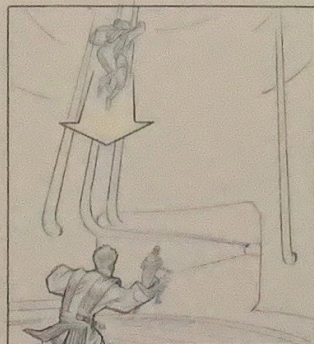
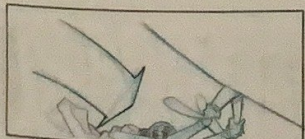
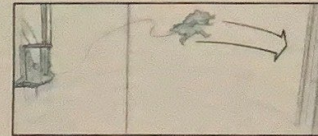
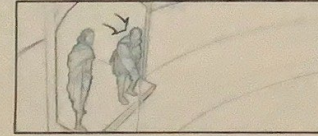
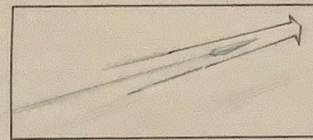
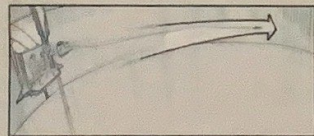
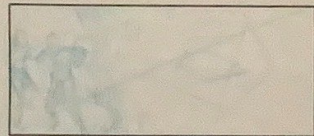
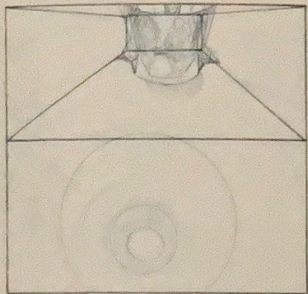
time. That's where my heart is. It's much more fun to be in the editing room creating the film.

A lot of directors come up with an idea and plot everything out, and then they very religiously follow that rigid matrix they've set up for themselves. Everything fits and you just do it. I don't do that. I like film to be organic. I like it to change. I'm very much a documentary filmmaker, in that I'm catching material, letting all kinds of funny influences come into it, and then I cut.

All of my films have been structured so that I shoot, I cut and edit the movie, I rewrite, I shoot some more, I cut it some more, rewrite in the editing process, and then shoot some more. I usually have at least two or three other shooting sessions after the main unit has finished. If it's planned, it's budgeted, the cast is all used into it, so it's all a part of the production process. The production is planned in segments rather than doing it in one piece and finishing it.

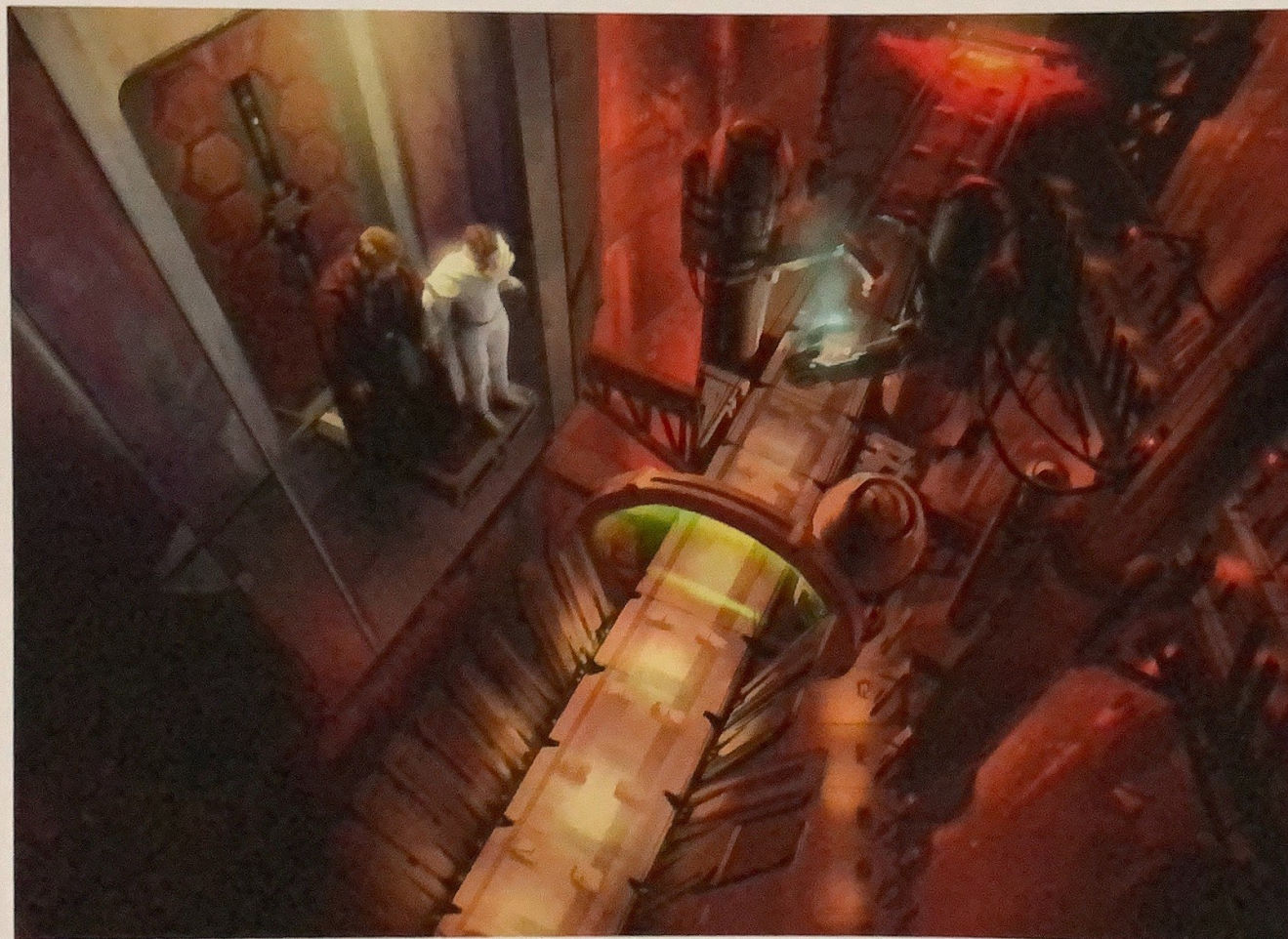
Ben Burtt After the shoot we came back to the Ranch and George sat down with me and watched what I had done. At

[illegible]



"I originally had three or four very talky scenes. There was a scene where Padmé encountered Dooku, and another where Padmé and Anakin were sentenced at a trial. But it became apparent that although Anakin and Padmé were going there on a diplomatic mission to rescue Obi-Wan the diplomacy angle didn't play very well. We needed some action."

George Lucas



that point he began to impose his own ideas on every shot—sometimes on every pixel at every shot.

George came into the editing room with the attitude that nothing was sacred. He was very free in throwing out anything he thought was wrong or unnecessary. He looked at it as an audience would, and was very critical of it. If a line of dialogue didn't work he threw it out. He wasn't unduly attached to anything.

George Lucas I would say that at least a third of the shots in the picture have been manipulated in some way. Sometimes I've slowed down one actor because he looks up too fast, or made other subtle changes that make the scene much better. They're the details that are so subtle it's sometimes hard to catch them on the set; you don't really notice them until you're editing. There's a constant manipulation that way. To me, it's exactly like using a word processor.

A Pre/Postproduction Facility

Doug Chiang From Episode I to III you can see the evolution of the working processes in the art department. It started off very much like how George worked with Ralph and Joe, and evolved into a digital workflow. It's happened on all levels, with editorial, with model building, with visual effects, the filmmaking. That's why the prequel trilogy is a breakthrough on many, many levels.

Death Becomes Her (1992) was one of the first films where I created concept art digitally. However, when I started designing Episode II I made the decision to draw in black-and-white and wash, to keep it in line with what Ralph McQuarrie and Joe Johnston did. Part of it was the challenge, but it was also because digital tools are so powerful that you can be enamored by how pretty it looks regardless of the quality of the design. By removing that, I was getting to the core of what is a good design. However, the advantage of digital tools is that in the very short, crazy schedule of film production, it gives you a lot of freedom to iterate, and it gives you a better fidelity.

Daniel Gregoire The previs department became a pre/post-production facility. After shooting had taken place, there were still big questions to be answered. First of all, most of what had been shot was on blue or green screen, making it very difficult to cut together and especially difficult to view. Watching a 20-minute sequence on blue or green is enough to send even experienced visual effects artists to the loony bin or at least into a deep sleep. At this point, it became our responsibility to fill these plates out with digital sets and characters.



3.338

Ryan Church/Concept Design Supervisor I went up to the Ranch to be part of the animatics department. They needed somebody for a limited amount of time to quickly draw backgrounds for the animatics.

George was editing downstairs and every day he would come up into the attic and sit behind the animatics guys in that little room, eat his sandwich, and design the new shots that he wanted. The animatics guys would then go off and do hours and hours of shots.

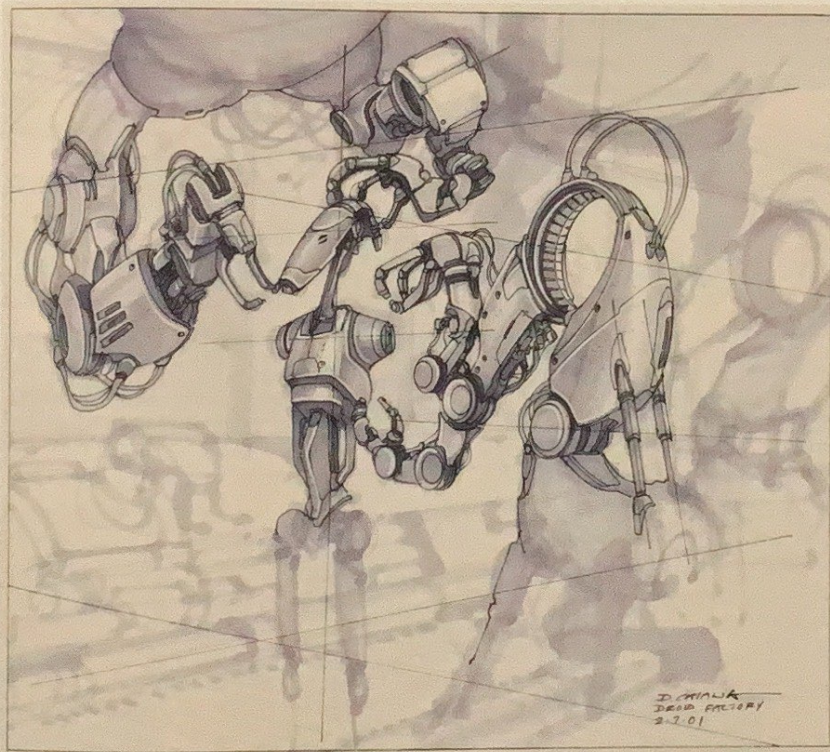
I did one background with paint—an establishing shot of the Senate—but I knew that I had to switch over to digital right away, especially after seeing George making changes, and then iterating on those shots. I used Painter software, a Wacom tablet, and a Mac. The computers were not very fast, but Painter did a good job of emulating traditional media. I approached each digital painting in the same way as I would approach a traditional one, which is to do a quick line sketch

in the computer, lay down some transparent washes on it, and then bring up the lights with opaque techniques. I got very fast at that.

The art department had already done a ton of work obviously, so we were using their designs and putting them into a story context for the previz. For example, for the speeder chase, putting Doug Chiang's speeder into a shot with Marc Gabbana's architecture. Then George would get an idea: "We're always surrounded by buildings—let's go to the industrial sector," and Erik Tiemens would come up with ideas for that.

Erik Tiemens/Concept Design Supervisor Ryan's background is in transportation design, with his love of vehicles and flying planes, while my background is in landscape painting and art history. We bring something of what we love into the film.

Ryan Church The job turned from helping the animatics guys out and doing backgrounds—we continued doing that—to a lot of design work, especially for the end battle.



3.339

3.337 Concept art by Ryan Church for the droid factory scene (May 10, 2001). This new scene was devised by Lucas to add more action at a slow point of the movie. The actors were filmed against blue screen during the March 2001 reshoot, and these shots were used as the basis for the background concept art.

3.338 Karl Kaufman's concept for the droid factory shows a view from above of the manufacturing production line (June 25, 2000). The final frame would use a mixture of linear and circular assembly lines.

3.339 Doug Chiang's concept for the robot arms that assemble the battle droids (February 7, 2001).

3.340 Ryan Church's concept art depicting Padmé on the droid construction conveyor belt (May 10, 2001). The heavy machinery and molten metal enhance the danger of her situation. Church: "The droid factory is a super threatening environment, a place by robots for robots. Soft, living flesh doesn't belong here."



3.340



CONVEYOR WITH LIGHTS BELOW



CONVEYOR WITH LIGHTS



STAMPER



STAMPER

STAMPER



STAMPER

STAMPER



STAMPER

STAMPER

1ST LEVEL ANAKIN JUMPS



ANAKIN AT UPPER LEVEL

WELDING ARMS AND ASSEMBLY ARMS

CONVEYOR AREA



WELDING ARMS AND ASSEMBLY ARMS



WELDING ARMS AND ASSEMBLY

END OF STAMPER



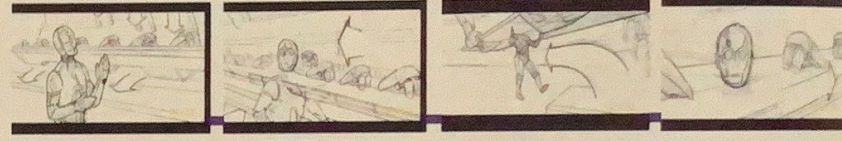
END OF STAMPER

BEGIN SAEITING FOR PRONE FALL

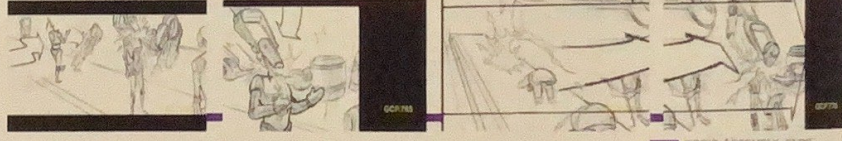


OROID ASSEMBLY

OROID ASSEMBLY



OROID ASSEMBLY



OROID ASSEMBLY ENDS



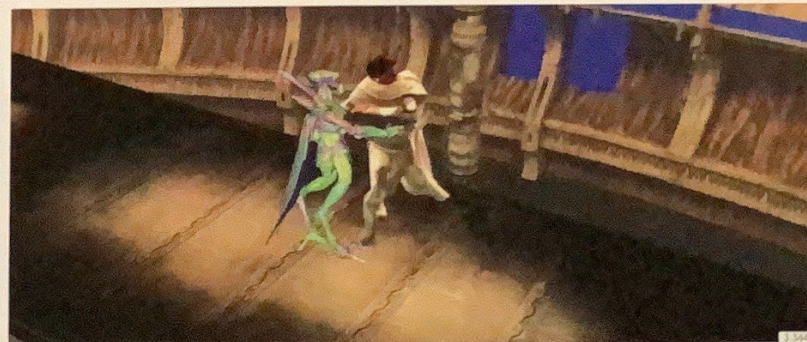
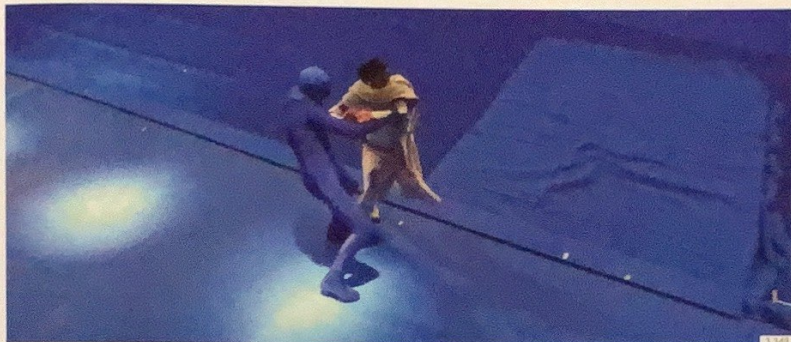
WELDING ARMS AND ASSEMBLY



UPPER LEVEL CUTTER ASSEMBLY LINE

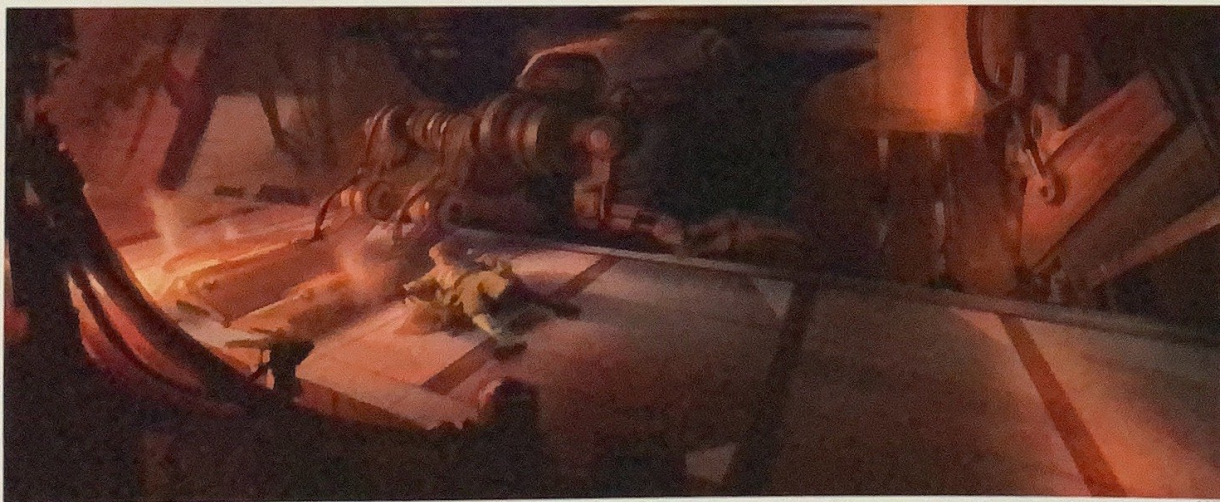


GIANT CRANE ARM KNOCKS HIM - UPPER LEVEL CUTTER ASSEMBLY LINE





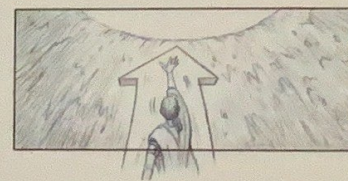
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3.349



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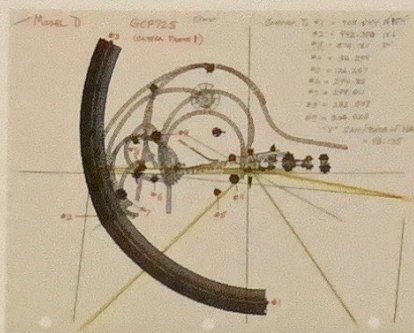
KIRK HENDERSON

3.350

- 3.341-342 Previsualization breakdown of shots for the droid factory scene. Many of the shots had been filmed in London on blue screen with Natalie Portman and Hayden Christensen — note how the lights on the floor act as reference points. HMI now had to design the backgrounds and add mechanical arms and robots, as well as create fully CG shots with C-3PO. There is a humorous subplot to undercut the drama where C-3PO's head is transplanted onto a battle droid (and vice versa).
- 3.343 The sequence where Padmé is attacked by a Geonosian was filmed with an actor dressed in blue so that Natalie Portman could have a realistic physical interaction with her attacker.
- 3.344 The actor in blue is replaced with a Geonosian. Each color is a different CG element that can be animated to create a performance. A basic CG background of the factory conveyor has also been added.
- 3.345 A more sophisticated background graphic for the droid factory is created, showing the droid assembly conveyor process.
- 3.346 All the moving CG elements that have been created — the Geonosian, the factory conveyor in foreground and background, as well as the smelting pot.
- 3.347 The final frame integrating the live action and CG elements, enhanced with steam and light effects.

Daniel Gregoire Not only were we putting together all digital sequences but now we were doing all the steps ILM does to complete the final shots, only we were doing them very rough and very fast. From tracking the plate, to keying out the blue, to rotoscoping, to full compositing, each artist was a full production pipeline unto himself. By completing this work in an early rough form, Burtt and Lucas were able to make much better decisions about how to cut sequences of the film, and of course our work made these sequences viewable. By the time ILM started taking on the final shots, the previz department had almost the entire movie filled out with digital sets, digital characters, and digital scenes that were believable and story complete.

By the end of Episode II, the previz department had grown to about a dozen artists from four at the start of the show. Powered by Advanced Micro Devices (AMD) PC hardware and Alias's Maya with After Effects on the Macintosh we were able to take on a lot more tasks than we did at the start. The quality of our work had increased to the point where we were answering all sorts of other questions that were usually only addressed in the final stages of visual effects work. Lighting, texture, mood, feel, character animation, particle simulations, dynamic simulations were all entering the realm of previz. No longer were we only doing simple animation and 2-D cheats to get half the point of the shot across. We were not only looking to see if the shot was working, but also how we could make it visually look better. We were taking art and design direction from art directors Erik Tiemens and Ryan Church on aesthetics, mood, and feel, and trying to answer more than



we had in the past. This in turn gave George a much more powerful tool in the decision-making process and helped him maintain greater control over his film.

Figure It Out

Rob Coleman After Episode I, I had the foolish mindset that there was nothing George could throw at me that I couldn't survive. Then he mentioned that Yoda has a fight scene, and later on he throws in the Clone War. Actually, I think he holds back a little purposefully because if he told us everything at once we'd have cerebral hemorrhages. He smiles when he gives us the next thing.

John Knoll / Visual Effects Supervisor There are approximately 2,000 visual effects shot in the movie. That's about three or four times what we'd normally think of as a big visual effects

production. So, because of the size, we broke it down into three discrete chunks that we tackled like they were separate pictures, dividing the work along sensible stylistic boundaries, like planet or sequence, where possible.

John Knoll's team tackled the speeder chase on Coruscant, the asteroid field dogfight between Jango Fett and Obi-Wan, and the arena sequence. Pablo Helman's team looked after sequences on Naboo, Kamino, Tatooine, Yoda's battle with Count Dooku, and the penultimate shot of Palpatine surveying the clone army as it departs for battles on distant planets. Ben Snow's team, with Dennis Muren consulting, worked on the Geonosis scenes, including the 180-shot Clone War sequence. Rob Coleman's team of animators, responsible for supplying the CG characters that populate these scenes, the model makers, stage photography crews, and Viewpoint artists were all called upon to work for these units.

3.348-349 Concept art by Ryan Church showing Anakin wielding his lightsaber on the factory conveyor, and then getting his saber arm pinned down (May 10 and 15, 2001).

3.350 Kirk Henderson's storyboard shows Padmé trapped inside a smelting pot. Molten metal is about to be poured into the container.

3.351 Notes showing camera position for matchmoving on the droid factory computer model for shot C/P 725—the overhead shot with Padmé inside the smelting pot. The tracks represent the assembly line, and the blocks are the smelting pots.

3.352 In this final frame Jango Fett and a number of destroyer droids have captured Anakin. With his lightsaber broken, Anakin has no means to defend himself.

144 CONTINUED:

COUNT DOOKU
 "I don't wish to make you to join
 our cause against your will,
 Senator, but you are a rational,
 honest representative of your
 people and I assume you want to do
 what is in their best interest.
 Aren't they fed up with the
 corruption, the bureaucrats, the
 hypocrisy of it all?... Aren't
 you? Be honest, Senator."

PADME
 "The ideals are still alive, Count,
 even if the institution is failing."

COUNT DOOKU
 "You believe in the same ideals we
 believe in! The same ideals we
 are striving to make prominent."

PADME
 "If what you say is true, you
 should stay in the Republic and
 help Chancellor Palpatine put
 things right."

COUNT DOOKU
 "The Chancellor means well, M'Lady,
 but he is incompetent. He has
 promised to cut the bureaucracy,
 but the bureaucrats are stronger
 than ever, no? Senator, the
 Republic cannot be fixed, what it is
 time to start over. The
 democratic process in the Republic
 is a sham, no? A shell game played
 on the voters. The time will come when
 that cult of greed, called
 the Republic, will lose even the
 pretext of democracy and freedom."

PADME
 "I cannot believe that. I will not
 forsake all I have honored and
 worked for and betray the
 Republic. I know of your treaties
 with the Trade Federation, the
 Commerce Guilds, and the others,
 Count. What is happening here is
 not government that has been
 brought out by business... It's
 business becoming government!"

COUNT DOOKU
 "Then you will betray your Jedi
 friends? Without your cooperation
 I can do nothing to stop their
 execution."

PADME
 "And what about me? Am I to be
 executed also?"

95

144

*BLUE REVISIONS 7/3/00

144 CONTINUED: (2)

COUNT DOOKU
 "I wouldn't think of such an
 offense. But, there are
 individuals who have a strong
 interest in your demise, M'Lady.
 It has nothing to do with
 politics, I'm afraid. It's purely
 personal, and they have already
 paid great sums to have you
 assassinated. I'm sure they will
 push hard to have you included in
 the executions. I'm sorry but, if
 you are not going to cooperate, I
 must turn you over to the
 Geonosians for justice. I've done
 all I can for you."

JANGO FETT
 "HAND OVER YOUR WEAPONS."

ANAKIN hesitates, TUMBLING ON THE LIGHTSABER

COUNT DOOKU
 "You may cause a lot of bloodshed,
 my young Jedi... but you will not
 escape."

PADME
 "Anakin..."

ANAKIN hands his lightsaber over to ONE OF THE GUARDS.

145 INT. GEONOSIS HIGH AUDIENCE CHAMBER - DAY
 ANAKIN and PADME are standing in the center of what looks like a
 courtroom. Seated before them in a tall boxed-off area is POGGLE
 THE LESSER, the Archduke of Geonosis. He is accompanied by his
 underling, SUN RIT. Off to one side sit Separatist Senators PO
 NUDO, TESSEK, and TOONBUCK TOORA. Next to them are the Commerce
 Dignitaries, SHU MAI, NUTE GUNRAY, PASSEL ARGENTE, WAT TAMBOR, and
 SAN HILL of the Intergalactic Bank Clan. Along the wall about
 HUNDRED GEONOSIANS wait for a verdict.

SUN RIT
 "You have been charged and found
 guilty of espionage."

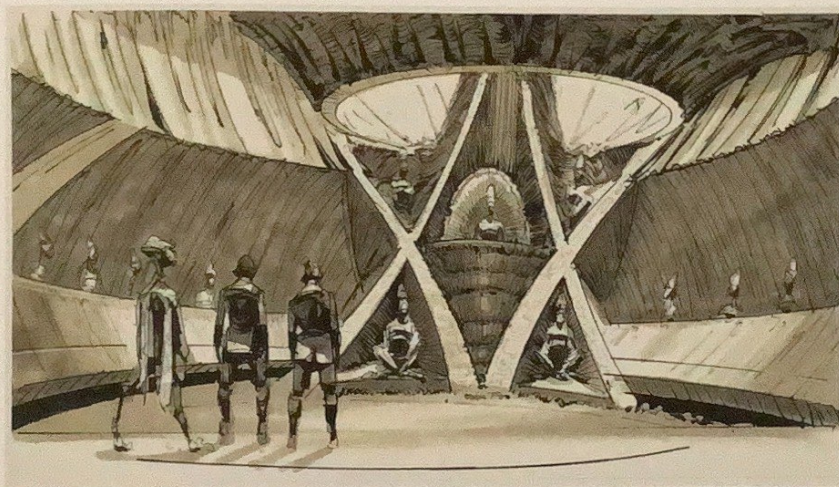
POGGLE
 "Do you have anything to say before
 your sentence is carried out?"

PADME
 "You are committing an act of war,
 Archduke. I hope you are prepared
 for the consequences."

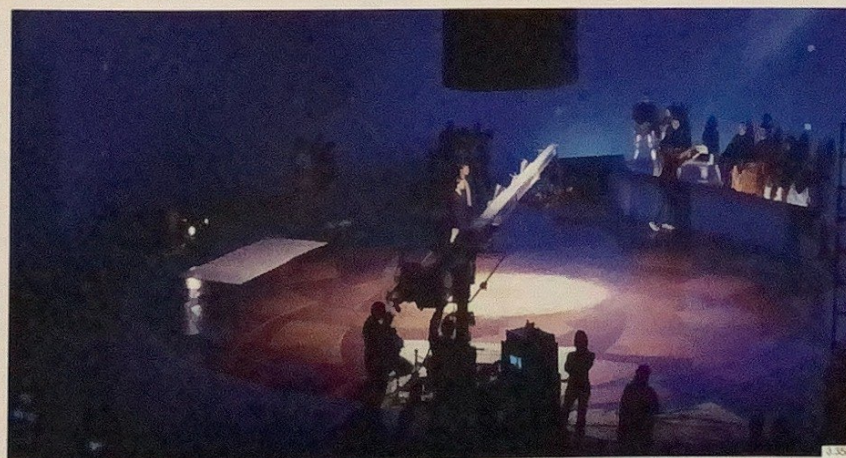
POGGLE laughs. COUNT DOOKU simply smiles.

"What is happening here is not government that has been bought out by business...it's business becoming government!"

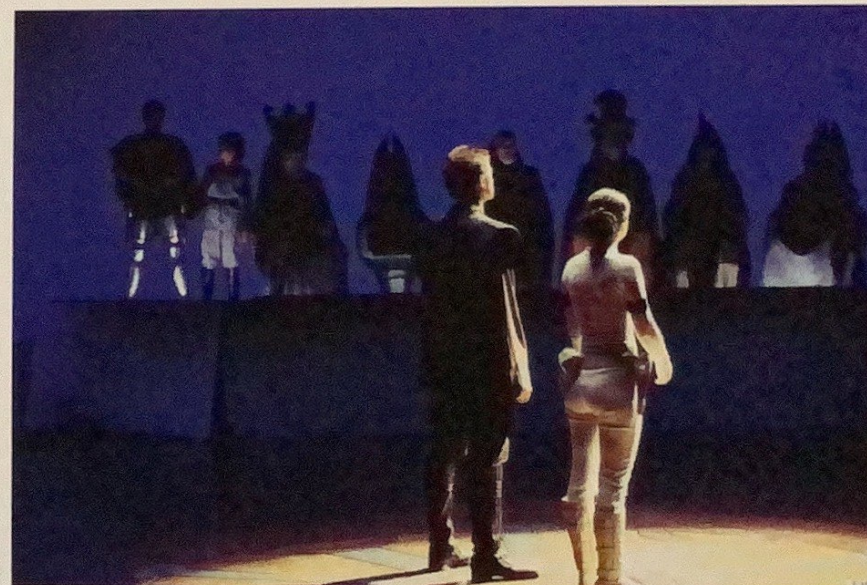
Senator Padmé Amidala



3.355



3.356



3.357

Rob Coleman There is very much a team spirit. The 400 men and women at ILM all have specializations, from modelers to lighting experts to a research and development team. And then there's a whole team of folks who figure out how to do things technologically.

Pablo Helman / Visual Effects Supervisor We may not know how to do something when George tells us about it, but it's our job to go figure it out.

Mike Blanchard The editorial process is ongoing. Periodically, we send Avid sequences to ILM, they make EDLs (edit decision lists), and digitize selects to their server. That then goes into their pipeline and they can also output directly to the TI (Texas Instruments) HD cinema projector for dailies. At this point we're strictly watching effects shots in HD off the server from the digital projector.

Michael Cooper / ILM Director of Film and Editorial Services We ended up with 14 TB in editorial alone. We kept tons of images in full HD online and accessible to our artists. Our video

3.353-354 The shooting script includes scene 144 where Anakin and Padmé are captured by the Geonosians and Count Dooku tries to persuade Padmé to join his alliance but she refuses. Consequently, Padmé and Anakin are to be tried for espionage. This scene was deleted from the final cut.

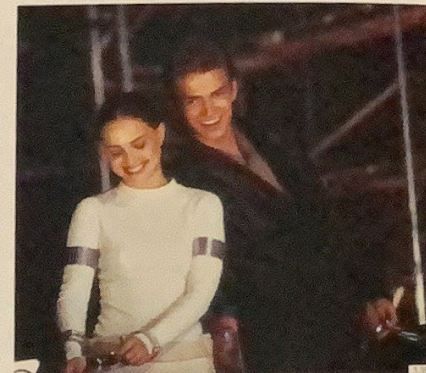
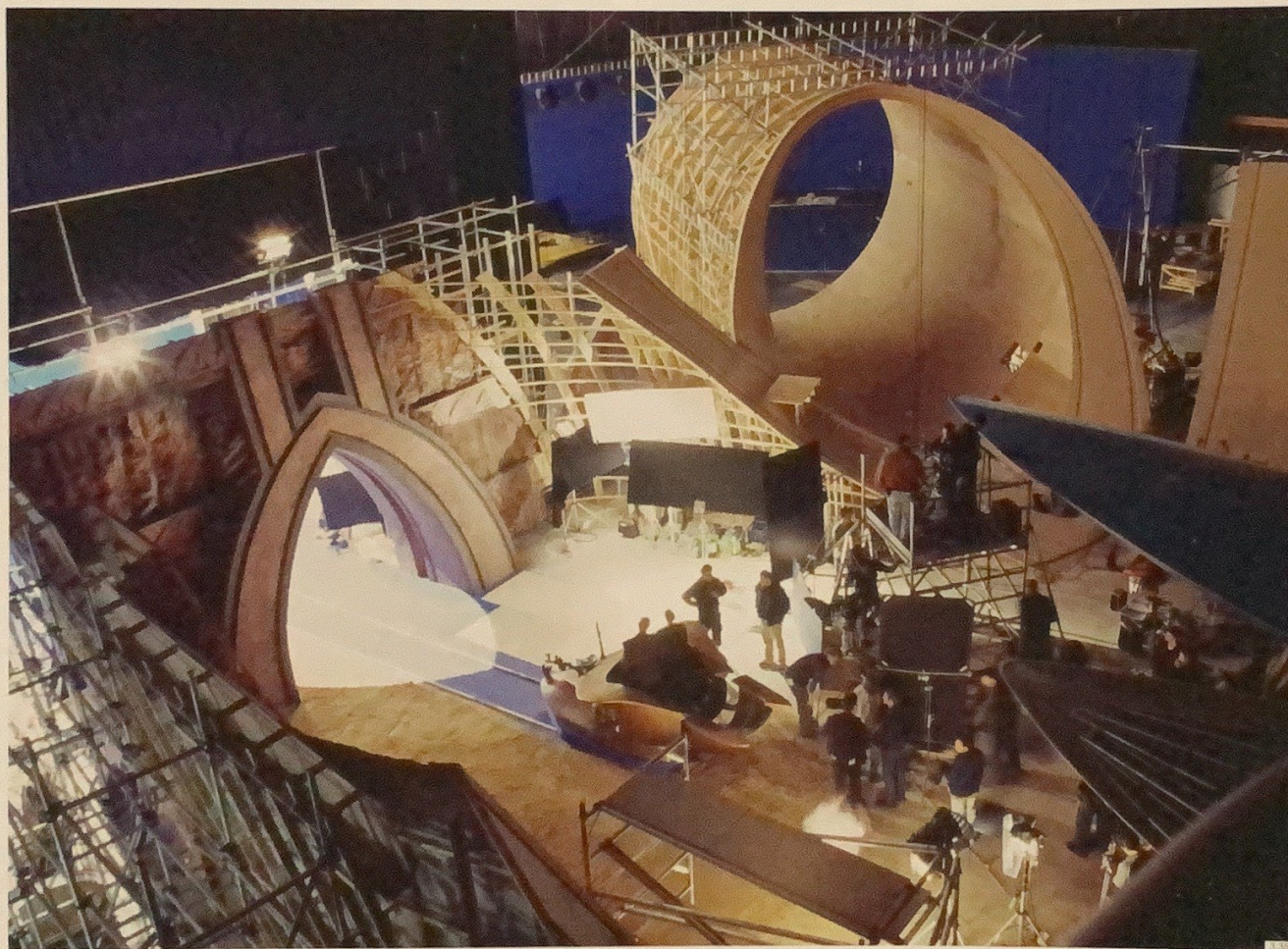
3.355 Ed Natividad's concept art for Padmé and Anakin's trial (May 24, 2000).

3.356 About to film the trial scene, where Nate Gunray calls out at one stage, "Get on with it. Carry out the sentence. I want to see her suffer."

3.357 Anakin and Padmé are sentenced to death by Poggle the Lesser, Archduke of Geonosis. Padmé says this is an act of war and he should be prepared for the consequences. Poggle: "We build weapons. Senator... that is our business. Of course we're prepared!"

"My love for you is a puzzle, Annie, for which I have no answers. I can't control it...I truly, deeply love you and before we die, I want you to know."

Padmé Amidala



- 3.358 The set for the tunnel that leads into the execution arena. The cart is installed upon blue-screened rails. The set is Dooku's secret hangar, which appears later in the film, the archway of which is used as the arena entrance.
- 3.359 Natalie Portman and Hayden Christensen, handcuffed, share a joke before filming commences.
- 3.360 Erik Tiemens's concept for the entrance to the Geonosis execution arena (November 19, 2001). Padmé and Anakin are about to meet their fate.
- 3.361 Final frame as Anakin and Padmé are waiting to be led into the execution arena. The creature pulling the cart is an orrany.
- 3.362 Anakin: "I thought we decided not to fall in love. That we would be forced to live a lie. That it would destroy our lives." Aware that they are about to die, Anakin and Padmé declare their love for each other and share what may be their final kiss.



1.300



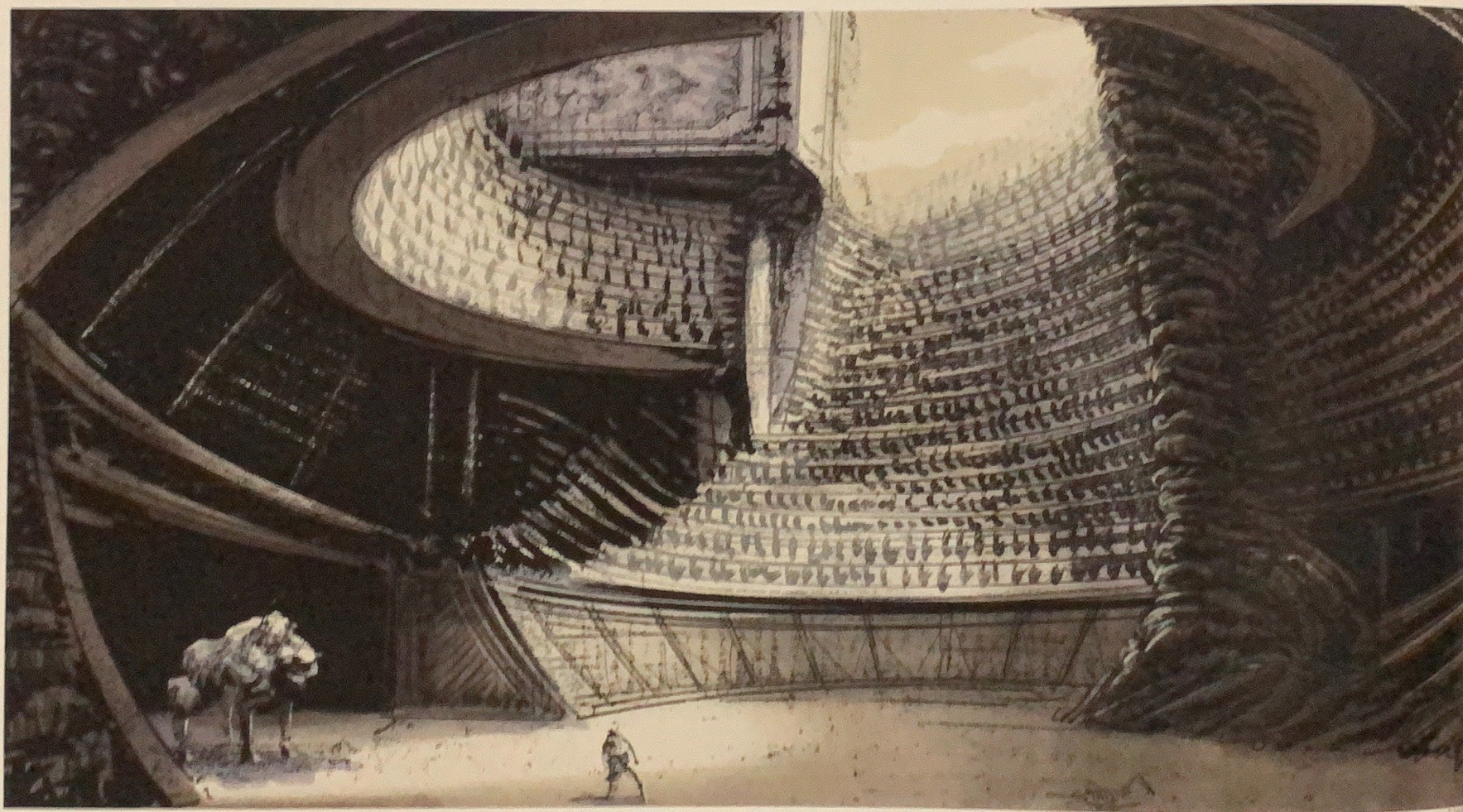
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1.302

"I had eight sculptors working on the arena, so my biggest job was to keep the project unified. You need one common denominating set of eyes to say, 'Your texture is different than the guy next to you.' I was more of a conductor than a mathematician."

Michael Lynch / Model Maker





3.363 Ed Naticidad's concept for the Geonosian execution arena (February 19, 2000). The arena's natural form casts areas of light and dark across the floor.

3.364–365 The miniature of the execution arena was 10 feet tall and 15 feet in diameter. There were eight sections, so different sections could be filmed simultaneously.

3.366 Final frame establishing shot of the exterior of the Geonosian execution arena, which is a combination of termite mounds and stalagmites. Note the location of the Federation craft in the distance.

3.367 Final frame showing hordes of Geonosians gathering to enjoy the spectacle of the execution. This shot of the arena recalls Ed Naticidad's play on light and shadow in his concept artwork.



engineering people built an incredible database so that everybody, no matter what platform they were on, could pull up thumbnails of any shot they wanted. When someone made a request, we could pull it off the HD server and deliver it in full resolution. This allowed the visual effects supervisors to see all of their shots in sequence with surrounding shots.

Depth

George Lucas It takes longer at this point in time for them to build and finish a CG model than it does for them just to build one for real.

Pat Sweeney / Effects Director of Photography We decided to shoot practical models with digital cameras, but there wasn't an immediate consensus that we could do it. We were trying a new format, and we were concerned. We saw the upside and downside and were a little nervous about the risks, but





Creature 3 (Firebreather)

Power 4/00

dp254

3.368



Traditional Dinosaur Creature 3

Power 4/00

dp255

3.369



Creature 3

Power 4/00

dp253

3.370

- 3.368 Dermot Power's concept for one of the execution arena's creatures, called "Firebreather" (April 7, 2000).
- 3.369 Dermot Power's concept for a "traditional dinosaur creature" (April 13, 2000). Its size is very large compared with the captive Jedi.
- 3.370 Dermot Power creature concept (April 13, 2000).
- 3.371 Ed Natividad's creature has several feline characteristics (May 3, 2000).
- 3.372 Dermot Power's concept shows the genesis of the reek with its hunched stance and assortment of horns (April 7, 2000).
- 3.373 Ed Natividad's concept has the segmented legs of the acklay but its influence comes from the insect world, with a head that resembles a horned beetle, rather than the crustacean-like design the creature evolved into (April 6, 2000).

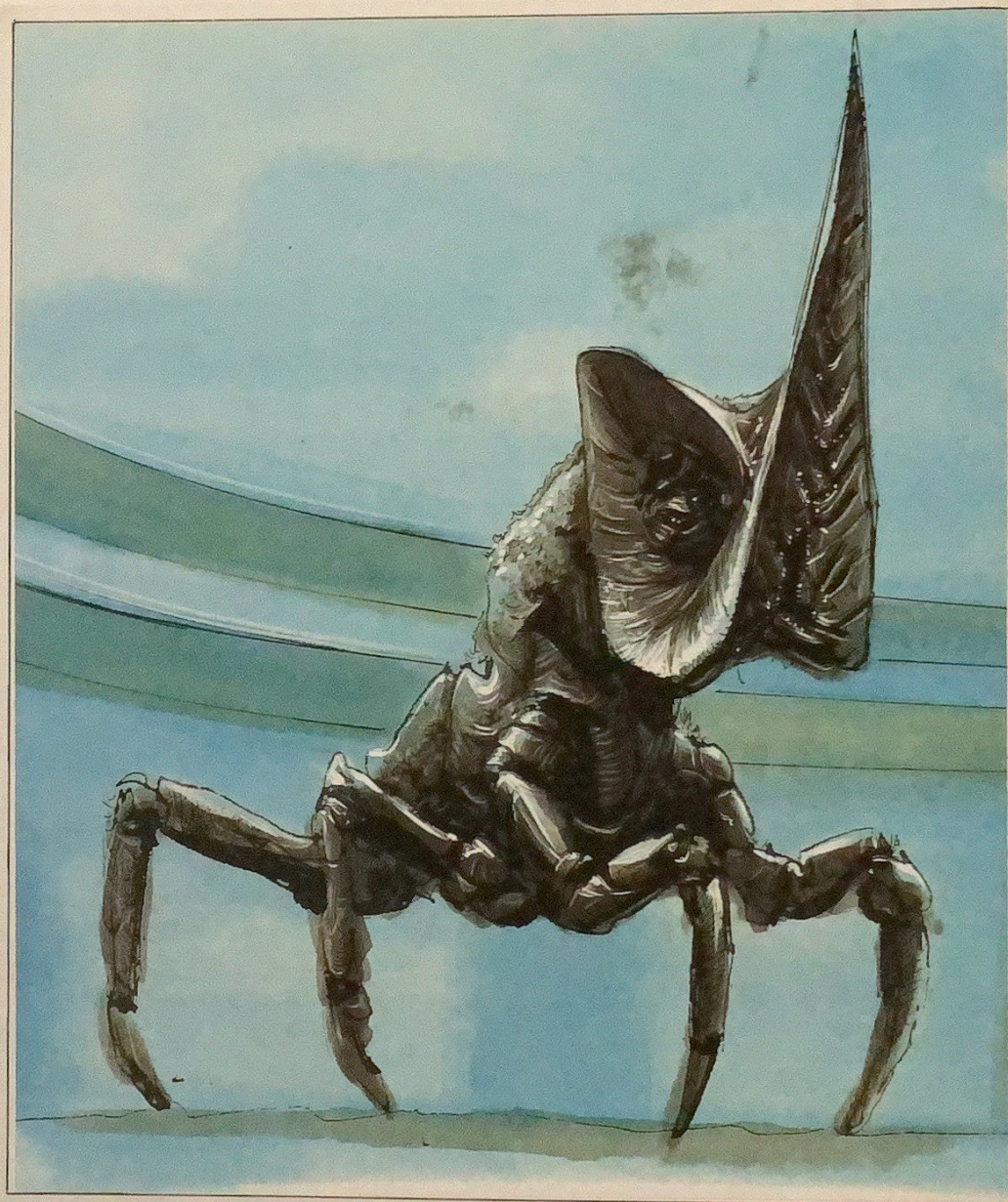


GI KATU WAD STOR
 EPISODE II
 GUNGAN AREA C
 SET 1

3.371



3.372



3.373

John Knoll said we should just go for it. Overall, it was very successful.

John Knoll All of us who do this work have gotten used to how things look on film and the level of polish you need to put into something for it to work on-screen. It's a bit different in HD. When we were working on our first miniatures, it was a bit of shock!

Carl Miller / Effects Director of Photography We quickly discovered that we had to add more detail to the models than we normally would.

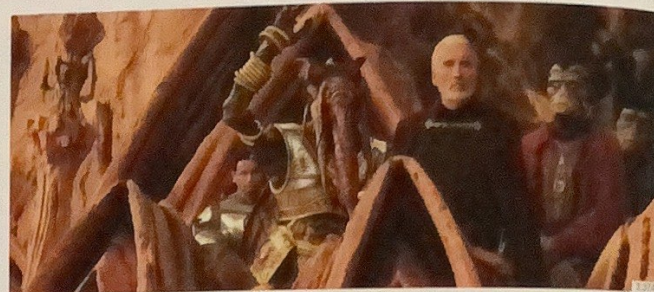
We could see an effects shot immediately at full resolution on the big hi-res monitors. That allowed us to more accurately assess whether our shots were working, so we didn't have to keep tweaking them to death.

Also, rather than pulling out a light meter and reading values of exposure, you can actually look at the model you're shooting digitally and build the shot until it feels right. Unlike film, where we have to calculate the exposure and trust our intuition, with HD we can actually open or close the lens, then look at and "feel" the image, so we can now be much more aesthetic about it.

We could also do more accurate onstage composites because the images from the HD signal were better registered and clearer, compared to the normal videotape images we're used to getting with film. If we had to add someone in a miniature shot, we could make sure his feet were tracking perfectly to the floor of the background we were shooting.

Pat Sweeney We need increased depth of field when we shoot miniatures. Typically, we like to stop the lens down a lot more than a DP does in live action. We're trying to take a very small object and make it look like a huge area. That means that everything needs to be in focus. So we are typically running the lens at an aperture of f/16 or f/22. The way we were able to achieve this previously is with cameras that are able to shoot at a slower frame rate. But the HD cameras shot, at their slowest, at 24 fps. We had to light the sets hotter than usual or shoot them in quadrants so we could shoot in different focal planes. In other words, we'd have an area in focus three different times and blend that together in post.

John Knoll As soon as we wrapped we could take a look. If it was OK, we could strike the set. It was instant gratification.



Ryan Church The model shop built part of the Geonosian arena and it had a melted candle finish. George wasn't happy with that—he wanted to replace it with something much more angular.

Paul Duncan Something ribbed, almost bone-like.

Ryan Church Exactly. It's a harsher look rather than a softer look. We decided to design each of those sides to look different: a window side, a crowd side, a side for Dooku's box, and a side where the creatures come out. They built that big model, which looks stunning.

Michael Lynch / Model Maker The paint job was difficult because the Geonosians are essentially the same color as the rock. The backstory about that is that the arena is built from the secretions of these creatures, and over time it erodes and they repair it.

The Knoll unit shot the arena sides (north, south, east, west) from December 10, 2000, to January 11, 2001, with further work undertaken from September 21, 2001, to January 17, 2002.

George Lucas We don't just put a model in the picture and it's done. The models are used as a starting point—then they have digital enhancements.

Rob Coleman In Episode I the Gungans and the battle droids were stacked up behind each other. What's different on this movie is that George has used what we call z depth, or the axis that's going away from camera. In the arena the Geonosians are the audience in the amphitheater, so you get to see them all, going up through the tiers. That makes it more complex for animation because more are seen and we have to pay closer attention to their actions to make sure there are no glitches.

The execution arena beasts were outrageous designs, but they were workable in terms of animation. I was never worried about the reek, which was big and muscular and well designed. I was a bit more worried about the nexu, because of its huge claws. In the maquette he was down very low, almost like a hunting cat, so we had to lift him up a bit to make him work. Also the walking cycle had the twisting action of a Komodo dragon, and that took some effort. The acklay had fingers coming off its six legs. I wasn't sure what to do with the fingers initially, but overall he moved a lot like a crab.

Film Is Cruel

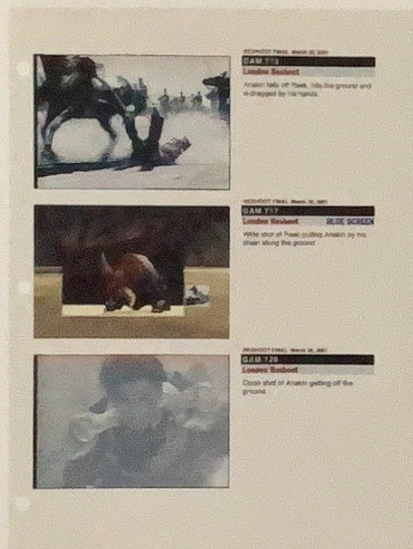
Paul Duncan You completed the first cut in February 2001:

George Lucas It ran about three hours, so the next step was to cut out a lot of the material that seemed redundant. When



“The proportion of the reek horn grew out of the action George wanted in the arena, specifically something Anakin could grab onto.”

Doug Chiang



- 3.374 Final frame showing Poggle the Lesser (left) announcing that the executions should begin.
- 3.375 Ryan Church's concept for the execution posts in the arena (September 17, 2001). It shows the archdural box, from where the dignitaries will view the spectacle, high up in the background—an earlier concept had the box lower.
- 3.376 Shot information sheet (dated March 20, 2001) showing the reekshot material required for Anakin being dragged across the arena floor by the reek. It includes reference images from *The Charge of the Light Brigade* (1936) starring Errol Flynn, with the intention of demonstrating the precise framing and movement Lucas required.
- 3.377 Having thrown his chains over the powerful reek, Anakin is dragged around the arena.
- 3.378 Anakin finally manages to gain the upper hand over the beast. He is flanked by spear-wielding piradors mounted on arrays.
- 3.379 Hayden Christensen poses the blue-covered gimbal that will become the reek in postproduction.





EP2 SHOT STATUS (Stage Layout)

ILM Shot	#	Thumbnail	Arena Location / Shot Description	ILM Elements
GAM005	35		Arena East (medium) JAY - OBS' WAIN FALLS	stage elem: arena miniature stage elem: dust cloud / dirt cranks rig activity: claw rig plate rig: geonodians (crowd)
GAM010	40		Arena Northwest (high/lt wide) / day ACKLAY STRECKING	stage elem: arena miniature stage elem: dirt cloud/dust rig activity: claw rig plate rig: flying water
GAM015	45		Arena East (medium) LOW - OBS' WAIN FALLS, ACKLAY STRECKING	stage elem: arena miniature stage elem: dirt cloud/dust rig activity: claw rig plate rig: geonodians (crowd) rig: flying water
GAM020	50		Arena Northwest (wide, high/lt) / day ACKLAY STRECKING	stage elem: arena miniature stage elem: dirt cloud/dust rig activity: claw rig plate rig: flying water
GAM027	55		To Arena BS OBS' WAIN	rig activity rig: geonodians and water to top view rig: flying water / flying water (to top view) rig: geonodians (crowd) stage elem: dirt cloud/dust (to top view) rig: flying water rig: flying water rig: flying water
GAM030	60		Arena Southwest (to back view) BS JANGG & BOBA	stage elem: arena miniature rig: geonodians rig: flying water rig: flying water rig: flying water
GAM035	65		To Arena BS OBS' WAIN	rig activity rig: plate rig: flying water rig: flying water rig: flying water rig: flying water rig: flying water rig: flying water



3.385



441 873
KIM GIBBS
1 DEC 01
SW2

3.386



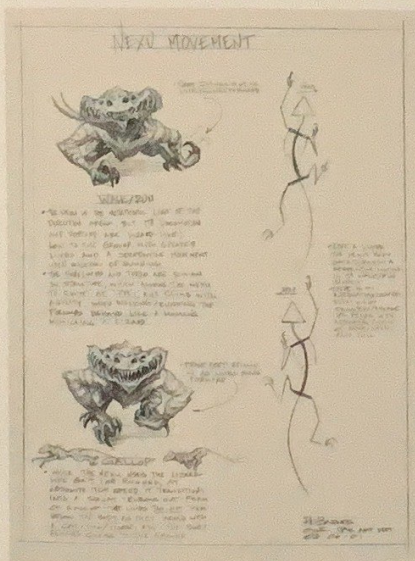
- 3.380 Creating the CG acklay and Geonussian on its erry. The initial frame uses basic shapes to generate a digital armature that the animator uses to define movement within the composition.
- 3.381 A more sophisticated CG model has refined the shapes of the creatures and their characteristics can be seen in greater detail. Each color represents a specific area that can be manipulated before the final exterior textures are added.
- 3.382 The final rendered image complete with highly detailed creature skin textures.
- 3.383 Final frame showing Obi-Wan battle the acklay using a spear. This image was influenced by the battle with a giant crab from *Mysterious Island* (1961) animated by Ray Harryhausen.
- 3.384 Shot status sheet (dated October 23, 2001) describing each shot of the acklay battle and the ILM work required to realize it— noting both the stage and CG elements that need to be composited into the final frame.
- 3.385 Ed Natividad's storyboard shows that though Obi-Wan is attached to the pole, he uses the Force to propel sand into the acklay's eyes.

- 3.386 Ryan Church's artwork depicts shot CAM 873, Obi-Wan fleeing from the acklay (December 11, 2001).
- 3.387 Natalie Portman preparing to film atop the execution post. Her costume has been slashed and scratch makeup applied following the attack of the vicious clawed nexu.
- 3.388 Production still showing preparation for Padmé's sequence on top of the post. The set is reduced in height and is surrounded by blue-covered crash mats.
- 3.389 Robert E. Barnes's detailed description of the nexu's movement process (March 6, 2001). While bearing an outwardly feline appearance, its movement is lizard-like, and its powerful simian arms give it the ability to climb as well as enabling it to swipe at its prey.
- 3.390 Robert E. Barnes's concept for the nexu showing details of its fur and markings (December 1, 2001).
- 3.391 Final frame of Padmé defending herself from the nexu using her chains.



"For the nexu, I was thinking of a mutated hybrid of human and feline energy, which was a very disturbing image in my mind."

Robert E. Barnes / Concept Sculptor



3.390



3.391

you are writing a script, to make a point you make the same point three times, hoping that it will register with the audience. But when you see the film you realize that you don't need to make the same point three times—you can get away with two times or even mentioning it only once. But you can only determine that after you've seen what impression is made in the context of the whole movie.

Paul Duncan As shot and in the first cut, you show Padmé with her family, which really builds her character and background, and then later there is a conversation with Count Dooku on Geonosis that expresses her political point of view very strongly.

George Lucas Yes. They do.

Paul Duncan But you cut all that.

George Lucas In the end you have a time constraint for a movie. The scenes added nothing more because we already understand that she is a kind person, so the scenes had to be cut.

Paul Duncan I thought that family visit was interesting because maybe it represented Anakin's desire for a family life.

George Lucas He's got a mother, but he doesn't have any siblings. And he doesn't have a father. But that's not unusual in contemporary society.

Paul Duncan Sure. His talk in the garden with her father set him up in a family situation. So not only was he falling in love with her, going from a crush to love, but also he is enamored with the idea that he could have a family life, one that he had never experienced.

George Lucas That was part of the idea but film is cruel. It's not a book, where you can add a chapter and people will still buy the book even if it is thicker. A movie is a two- or two-and-a-half-hour experience, and the total sum of that emotional experience is what people will remember.

Two thirds of the way through, about 90 minutes into the movie, you can see everybody getting up and going to the bathroom and wiggling around in their seats. You know that it's too long, so a lot of those decisions were made that way.

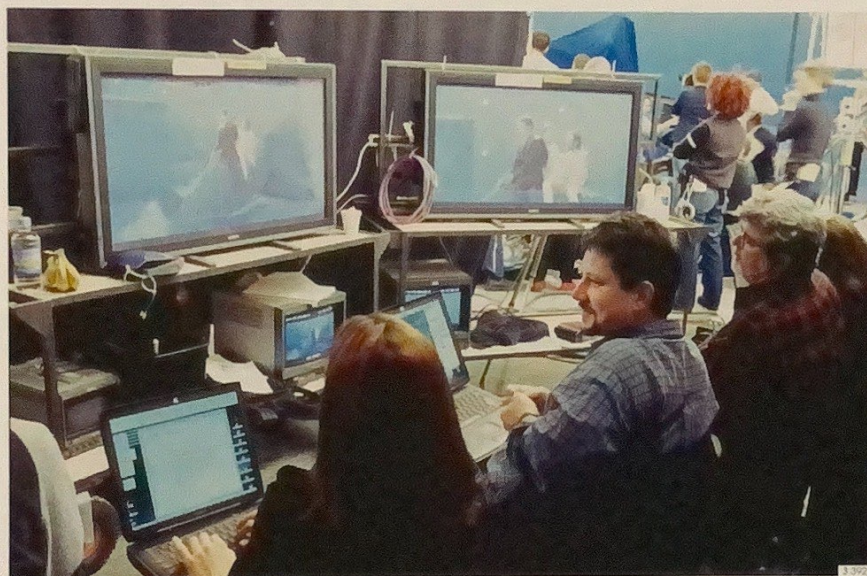
Sometimes you have to cut scenes, sometimes whole characters, and that's extremely painful. But you do it because



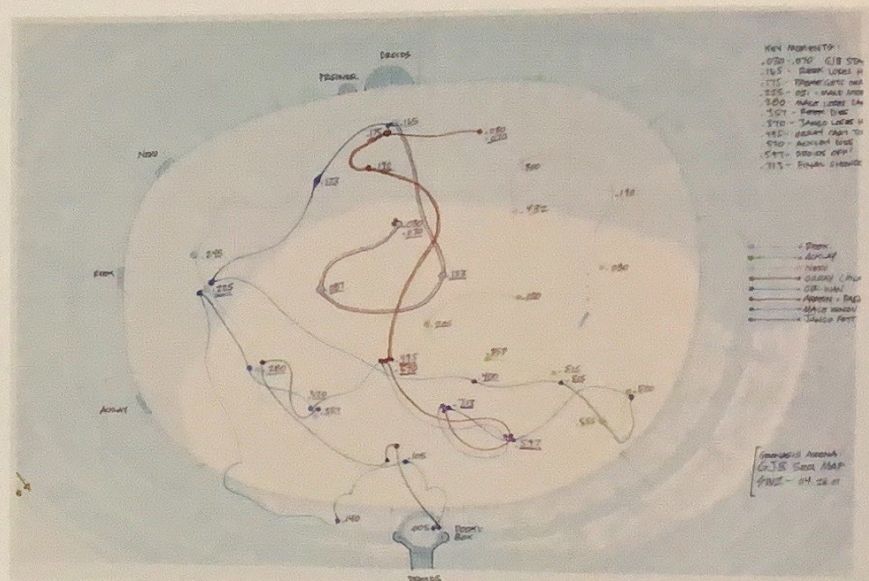
3.392

"Everyone else gets a lightsaber and I get guns that look like little hairdryers. Still, it was interesting to see Padmé in combat mode, a real fighter."

Natalie Portman



3.392



3.393



3.394

- 3.392 John Knoll (center) and George Lucas (right) viewing the composition of Anakin, Padmé, and Obi-Wan astride the reek. Knoll was on set to ensure that the shots were composed in such a way as to allow the postproduction CG elements to be realized. Two digital cameras were used to capture footage from different angles and distances.
- 3.393 Hayden Christensen, Natalie Portman, and Ewan McGregor on top of the reek gimbal waiting for shooting to commence.
- 3.394 CJB (Geonosis Jedi Battle) map (dated April 26, 2001) showing the key moments of the execution arena scene. It maps the movements of all the lead characters and creatures relative to each other in both spatial position and time—the position of each character is shown in a different color and each shot in the sequence is numbered. For efficiency all scenes where the light was coming from the same direction were filmed at the same time.
- 3.395 Final frame of Anakin, Padmé, and Obi-Wan on the reek surrounded by destroyer droids.
- 3.396 Mare Windu arrives with the Jedi. Ryan Church's concept for CJB 260 shows the Jedi rescue team battling inside the arena (August 15, 2001).
- 3.397 Ryan Church artwork for CJB 195 depicts Padmé astride an army as she joins the battle (October 23, 2001).
- 3.398 Ryan Church concept for CJB 195 shows the Jedi battle super battle droids (October 30, 2001).

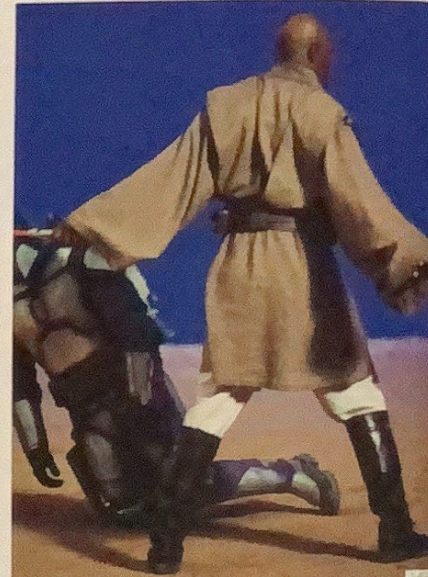
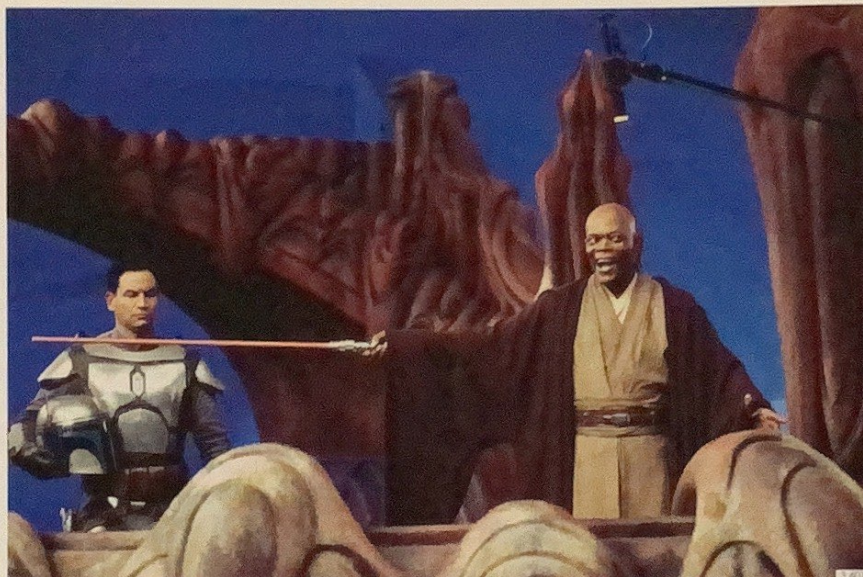


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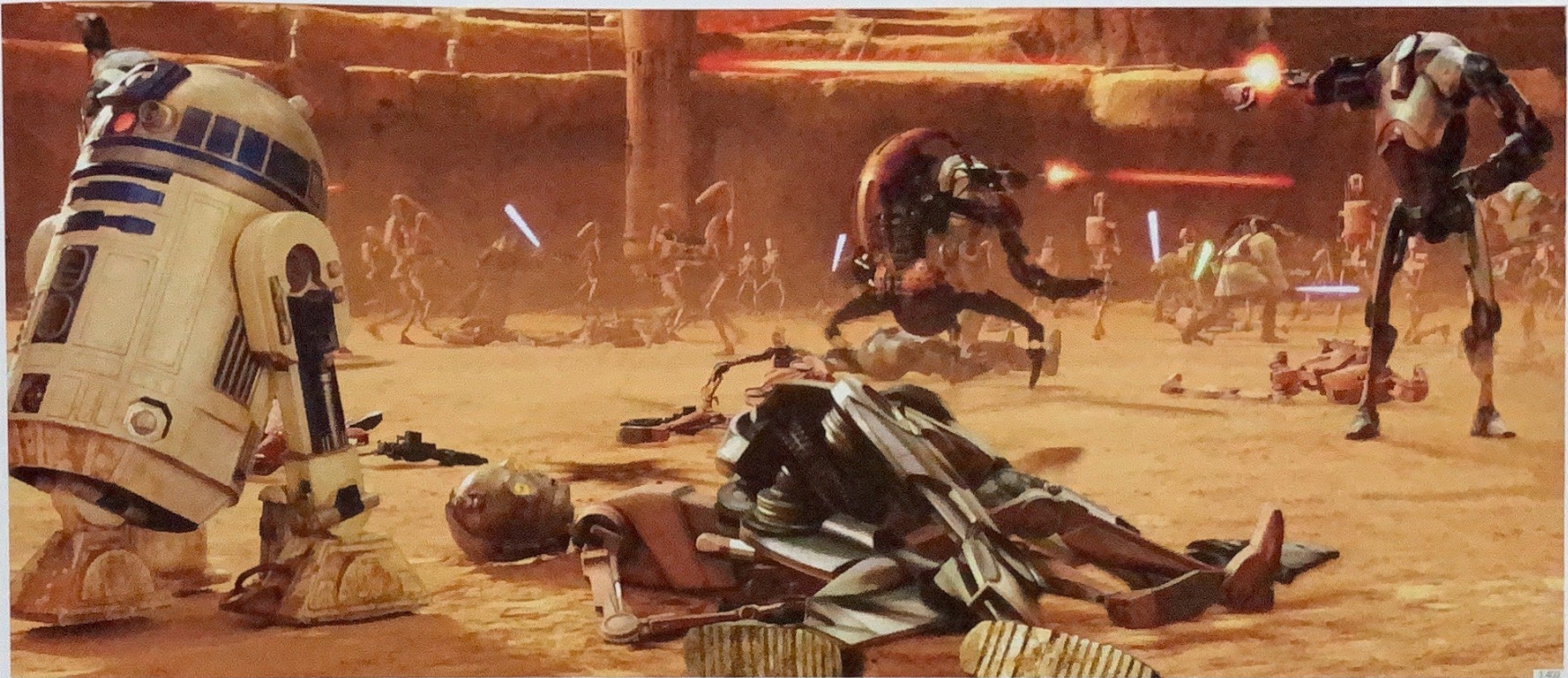


"It was great fun learning the fight choreography. Nick Gillard and I incorporated some balletic moves with very hard sword moves, which makes it look like a samurai fight."

Samuel L. Jackson

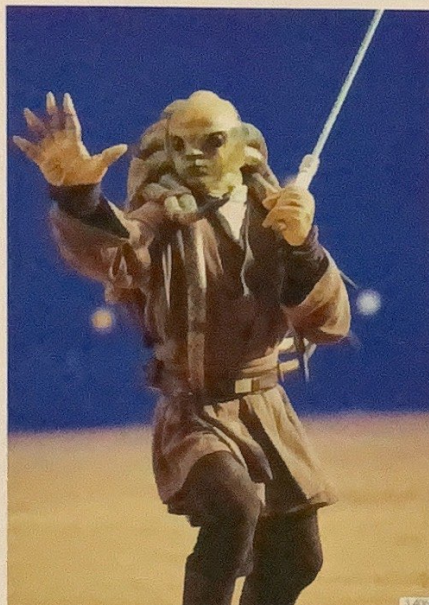


- 3.399 Temuera Morrison as Jango Fett ready to battle Mace Windu.
- 3.400 Final frame of Mace Windu confronting Jango Fett as his son Boba looks on.
- 3.401 Inside the architectural box, Samuel L. Jackson relishes his confrontation with Temuera Morrison's Jango.
- 3.402 The decapitation of Jango Fett. The decapitation is not bloody—the bounty hunter's empty helmet flies off (we see the shadow of the head on the ground) and the headless body falls to the floor.
- 3.403 C-3PO's head had been attached to a battle droid's body in the factory. This final frame shows Artoo pulling C-3PO's head off the battle droid (with a "pop" sound effect) before dragging it to C-3PO's body. As in the droid factory sequence, the humor lessens the intensity of the drama taking place elsewhere in the arena.
- 3.404 Storyboard showing a graphic depiction of C-3PO's head being detached from the battle droid's body.
- 3.405 Final frame of Artoo reuniting C-3PO's head with his body using a quick welding technique.



"We visited about 20 different kendo schools, fencing schools, anywhere where you can find those kind of people....I heard of one group that had been banned from the national competitions because they were way too aggressive. When I heard that, I knew they could be right for us."

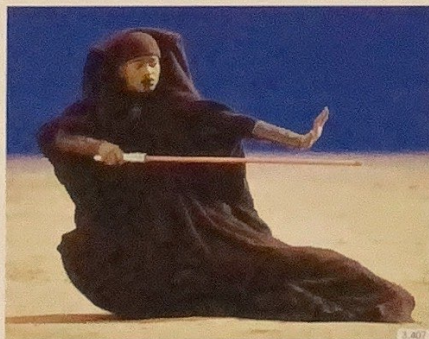
Nick Gillard / Stunt Coordinator



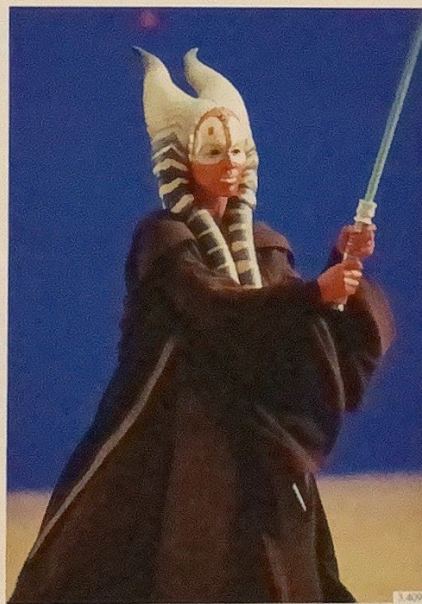
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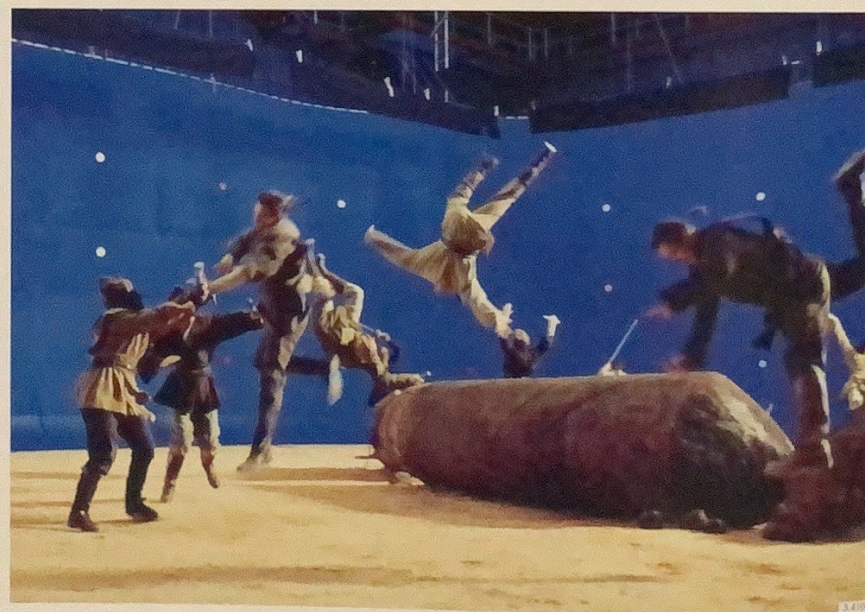


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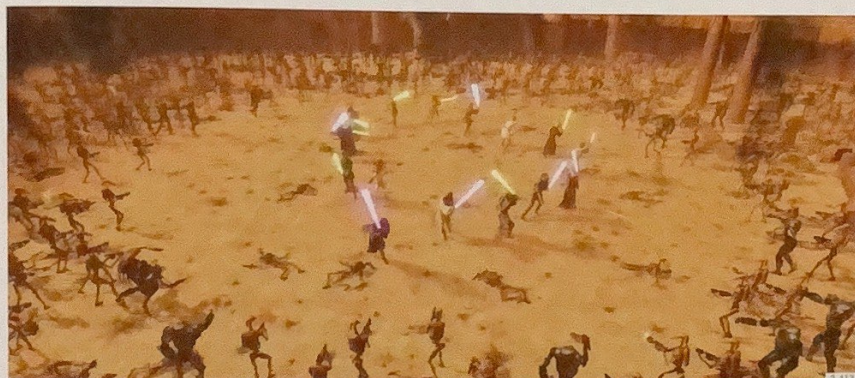
- 3.406 During the Jedi battle Kit Fisto (Zachariah Jensen) uses the Force to separate a battle droid head from C-3PO's body.
- 3.407 Mary Oyaya playing Luminara Unduli.
- 3.408 Many of the background Jedi were local practitioners of martial arts, who could more easily be trained in lightsaber fighting than traditional stuntpeople. On September 28, 2001, all 30 of the Jedi were filmed with two cameras one-by-one fighting in front of blue screen, under different lighting conditions, and then this was repeated but with them dying at the end of the shot.
- 3.409 Shaak Ti's design was originally proposed by artist Iain McCaig as a Sith Lord. Orli Shoshan plays the Jedi.
- 3.410 Shooting the Jedi battle sequence with stuntmen. An explosion will be composited behind them in the final frame.
- 3.411 The aluminum lightsabers were bent and damaged during filming so they had to be straightened and repaired.
- 3.412 Obi-Wan mourns the death of one of his respected colleagues. This reflects his compassionate nature.
- 3.413 Final frame of the last stand of the heroic Jedi.
- 3.414 Ryan Church's concept showing the Jedi are not strong enough to defeat the droid army (January 1, 2002).



3.414



3.413



concepts, like Padmé in trouble on a conveyor belt, and then we did shot compositions to inspire the animatics team.

The sequence begins with scene 142A, where Padmé and Anakin explore the corridors, swing across a gaping chasm, and Anakin disposes of Geonosians as they awaken, followed by scene 142B, where Padmé and Anakin are pursued by Geonosians through the droid factory as well as avoiding the relentless machinery before being captured. Scene 142C details the parallel adventures of C-3PO and R2-D2 in the droid factory, as C-3PO's head is swapped with a battle droid head. This, in turn, required additional shots in the arena where C-3PO is decapitated and his head welded back by R2-D2.

Ben Snow / Visual Effects Supervisor We had some nice paintings of the factory from the Ranch, but we didn't have specific artwork that laid out: "Here's what each machine looks like and here's what each machine does." Doug Chiang did some line

drawings of mechanical arms and we were able to extrapolate from those somewhat.

We took some of our painters, modelers, and R&D people out to tour the car plant. We also went to a foundry nearby. It was dirty and dark and nasty—everything I was hoping we'd get into the droid factory. We shot reference and texture material there, and I think we came up with a richer looking factory as a result of touring those facilities.

Twelve days of filming at Ealing Studios in London took place over two weeks beginning March 26, 2001, with the majority of the first five days shooting the droid factory scenes.

Natalie Portman They made me look so cool. They put me on a conveyor belt with nothing—it was all blue around me. So I basically had to run and dodge things, completely making stuff up. And then they painted stuff around me that looks like I'm jumping through things. I look so great. It was pretty exciting.

It's for the good of the whole movie. That is what's important. Not the things that you would give your right arm for, but can't. So you weigh all these things when you're doing a movie because you really want to respect the audience, but at the same time you want to get all the pieces in that you need.

Dangerous and Lethal

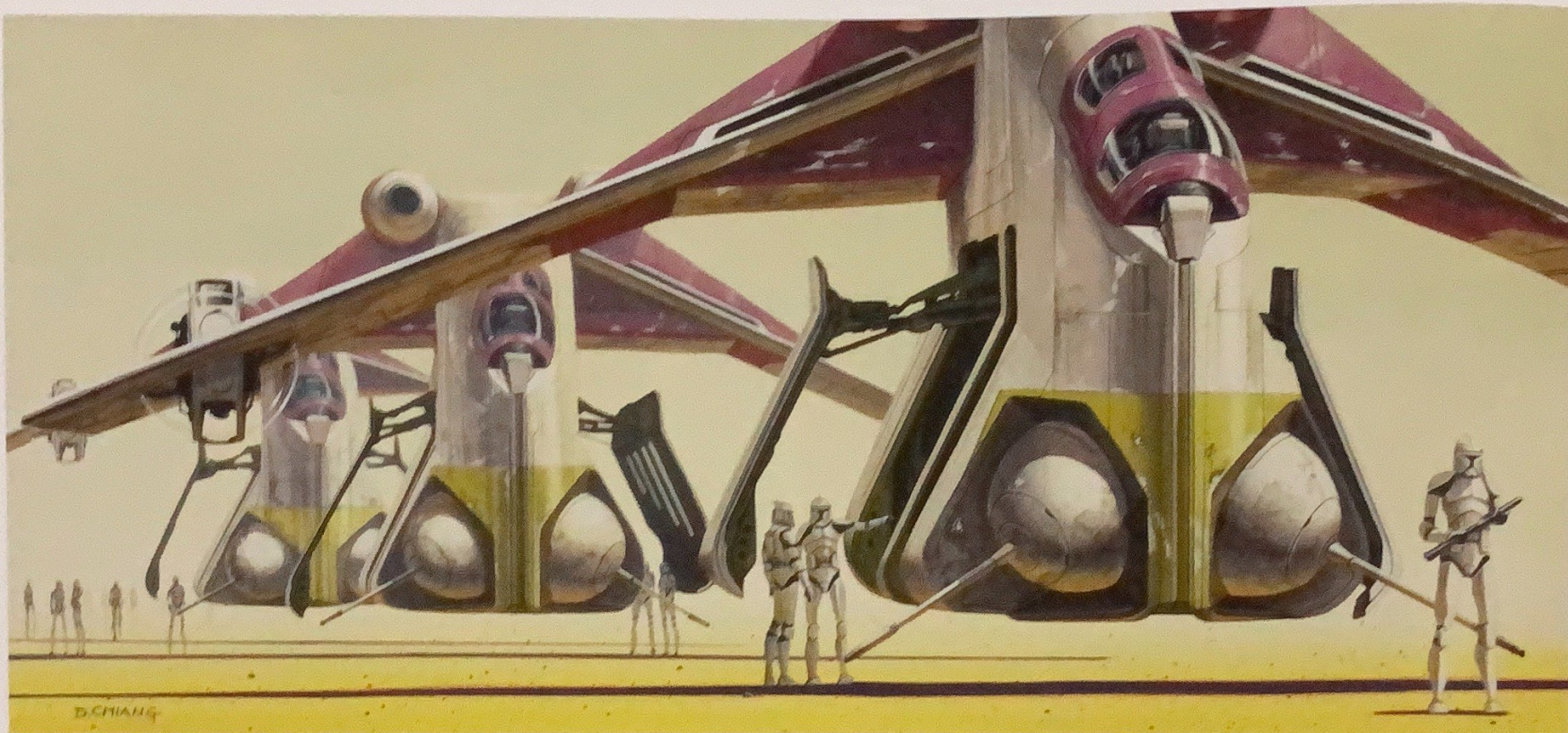
George Lucas When the conversation between Padmé and Dooku was deleted, the trial that followed automatically went out too. And once I did that, the film moved in a very straight line rather than stopping along the way for these side stories. However, the droid factory had lots of potential for an exciting sequence.

Rick McCallum When Anakin and Padmé arrive on Geonosis, ostensibly to save Obi-Wan from peril, it just wasn't dramatic enough for them to walk from one place or another. So George came up with an idea of them going through this factory that is building droids.

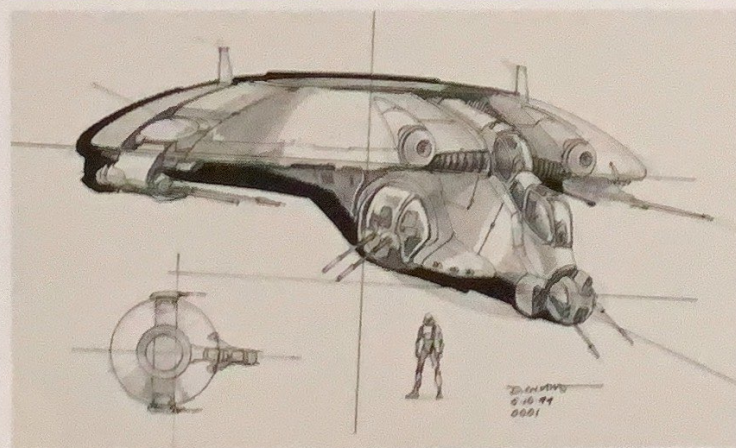
Ryan Church George wanted a dangerous and lethal environment. So the art department went on a field trip to the NUMMI Factory, the GM and Toyota joint car assembly plant across the bay in Fremont, to get an impression of an assembly line.

Erik Tiemens We appreciated the massive scale of an operation like that, the size and power of the stamp presses, and how helpless you are as a person. We did loose sketches to come up with the

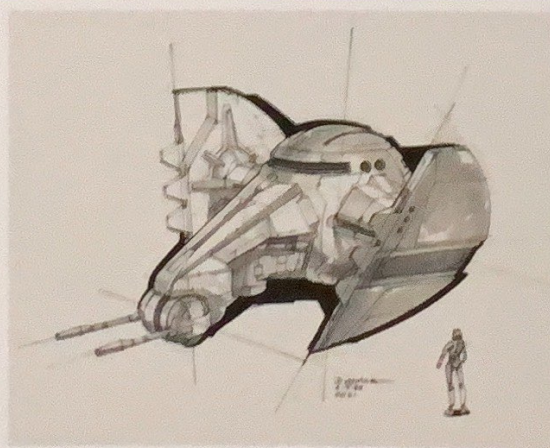




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3.416 Doug Chiang's concept art for the Republic attack gunship (May 16, 2000). The Clone troopers show the scale and hence capacity of the gunships.

3.416 Doug Chiang's concept for the gunship was his first drawing for the film (May 10, 1999). The design would later inform the droid ships that attack Kachyyk in *Revenge of the Sith*.

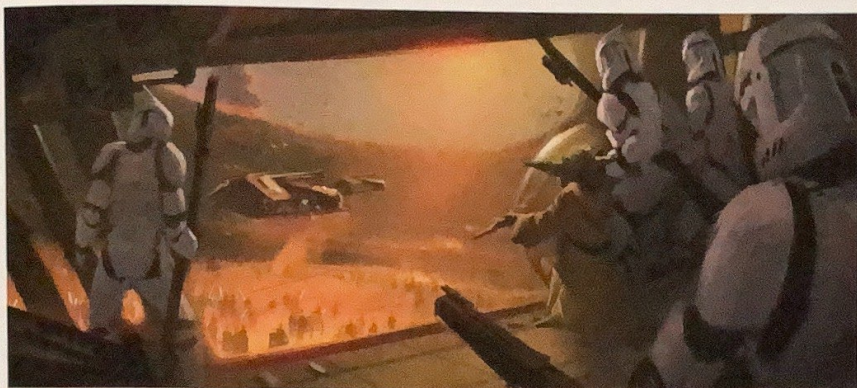
3.417 This Chiang gunship design looks like a precursor to the TH-119 fighter (June 4, 1999).

3.418 Ryan Church's concept shows Yoda and the Clone army on their way to rescue the beleaguered Jedi fighters (April 9, 2001).

3.419 Final frame of Yoda's gunship descending into the arena, with reinforcements behind them. This shot is from the perspective of the Jedi.

3.420 Erik Tiemens's design depicting the gunships entering the arena. A swarm of winged Geonosians scatter as the gunships open fire. This is dated August 2001, after principal photography had concluded.

3.421 Ryan Church's depiction of shot 61W (*Geonosis Clone War*) 150, where the gunships sweep down and fire upon the runway (August 27, 2001).



3.418



3.419



3.420



3.421

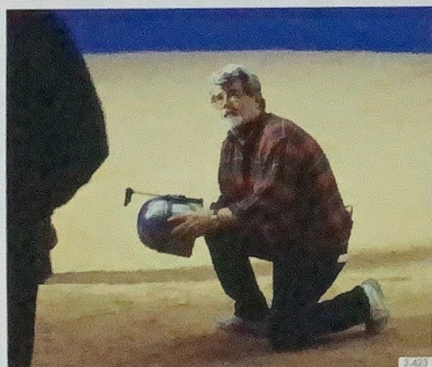


In the original script, after the speeder chase and the death of Zam Wesell, Anakin and Padmé immediately leave for Naboo. Lucas decided to add a scene where the Jedi Council instructs Anakin to take Padmé to safety. This scene was shot on April 2 with the actors against blue screen.

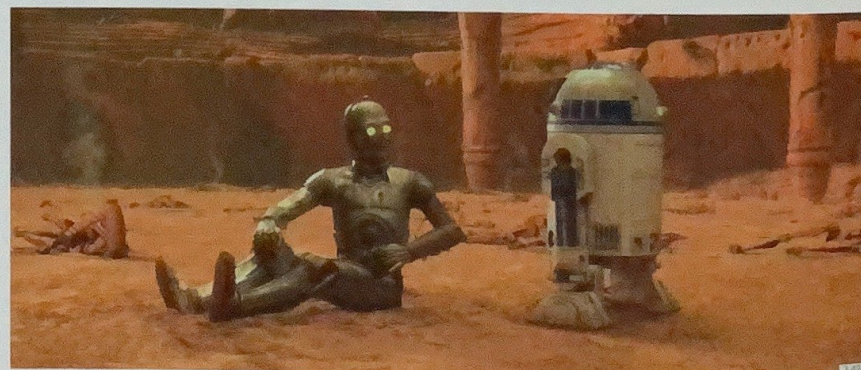
George Lucas I didn't want to build a new Jedi Temple interior just for that one scene, so I decided to steal one from *The Phantom Menace*. We built a number of temple interiors for *The Phantom Menace* because there were several scenes set there—a scene with Qui-Gon Jinn and Obi-Wan, and another where Anakin is tested. We took all the shots from one of those scenes, erased Qui-Gon and Obi-Wan and put in the new Obi-Wan and Anakin. We ended up with a filmed set in the middle of a digital movie—the only film in the movie in fact. That set had been shot on film four years ago, but it cut in just fine.

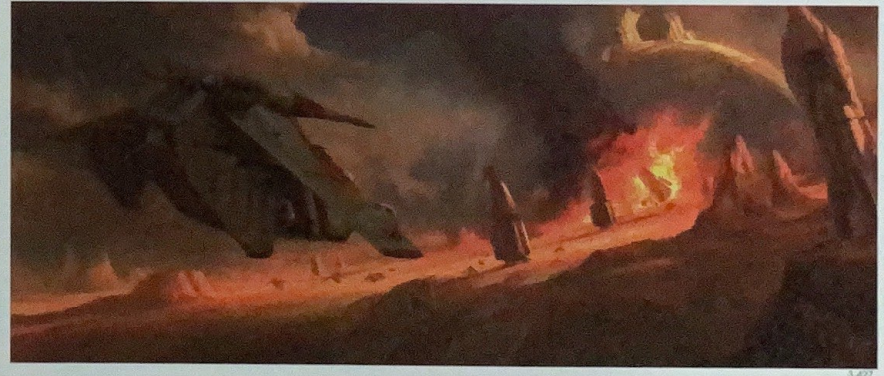
The Ealing Studios pickups were completed on April 7.

Ben Snow We brainstormed about how the droid factory would work. To figure out how one might really build a super battle droid, we took apart the CG droid model and hypothesized how each part might be made. Then we worked out each step of building a battle droid on the assembly line, drawing it up on a big foam core board: the stamping out of an ingot, the welding, the molding, et cetera. It goes by so fast



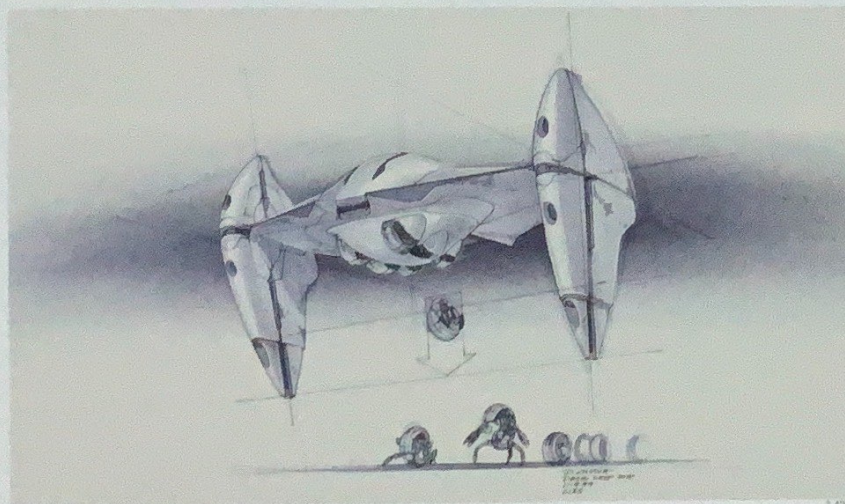
- 3.422 Boba Fett retrieves his fallen father's helmet. It's an iconic moment that provides backstory for Boba's appearance in later episodes. The final frame is identical to the concept art.
- 3.423 Lucas explains how he would like Daniel Logan to react to the death of Jango.
- 3.424 In contrast, C-3PO has been fully restored by R2-D2. C-3PO: "I had the most peculiar dream."
- 3.425 Ryan Church's concept for shot GCW 373, where the gunships and Republic assault ships leave the arena to attack the Separatist forces (January 29, 2002). Even at this relatively late stage, the concept team generated ideas for the climactic battle.
- 3.426 Ryan Church's concept for shot GCW 390 shows the gunships attacking the Techno Union ships (February 6, 2002).
- 3.427 Erik Tiemens's concept shows a Techno Union ship explode, with an Intergalactic Banking Clan ship at right, and Trade Federation Battleship Core in the distance (April 9, 2001).



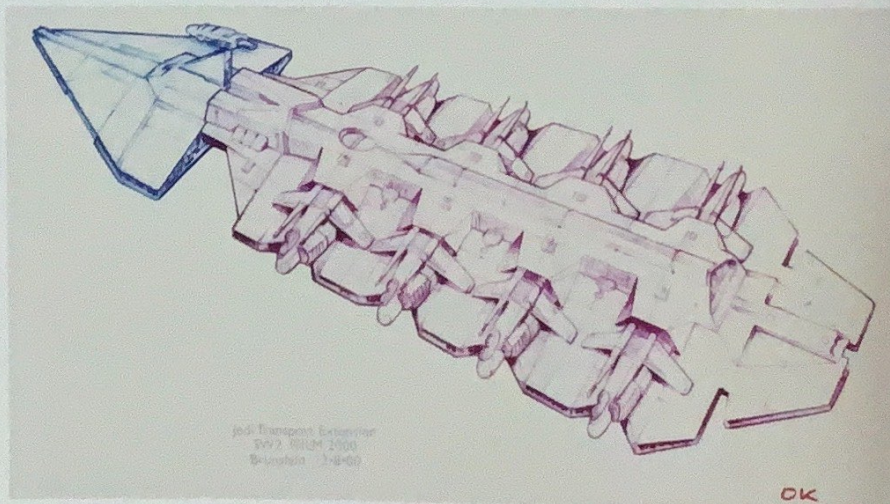




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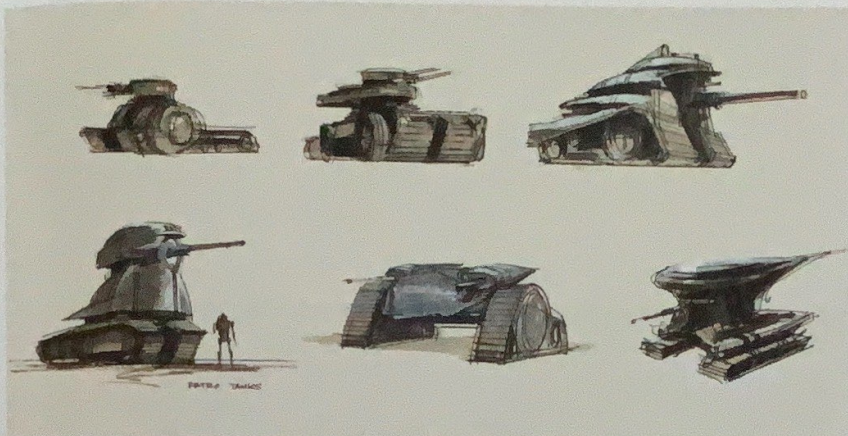


1.429



OK

1.430



3.431



3.428

3.428 As the gunships attack in the distance, a droid ship drops destroyer droids onto the battlefield in Erik Tiemens's concept (April 9, 2001).

3.429 Doug Chiang's unused concept for a droid drop ship (November 9, 1999).

3.430 Michael Brunsfeld's unused idea for a Jedi transport extension system from where gunships could be stored and launched (December 5, 2000).



3.430

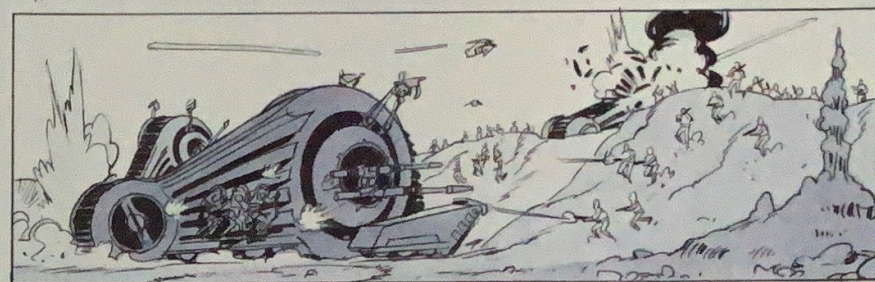
3.431 Exploratory designs by Erik Tiemens for droid tanks.

3.432-433 Ryan Church's concepts for the Corporate Alliance tank droids (April 20, 2001). These vehicles formed the basis for the droid tanks used in Revenge of the Sith during the attack on Kashyyyk.

3.434 Rodolfo Damaggio's storyboards for the ground battle of Geonosis show the tanks in action.

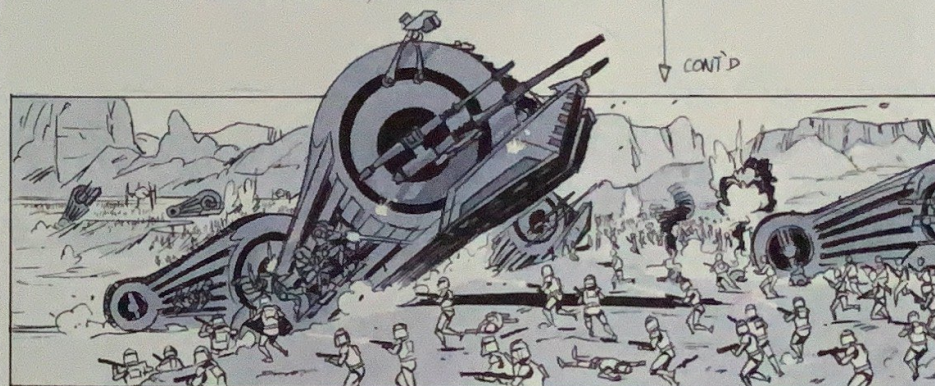
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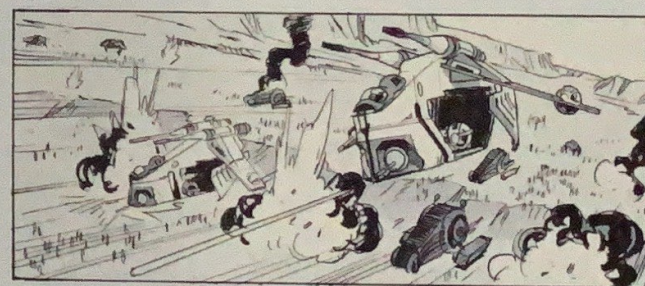


TRUCK RIGHT W/ TANK AND CRANE UP

CONT'D



410G



TRUCKING BACK W/ GUNSHIPS

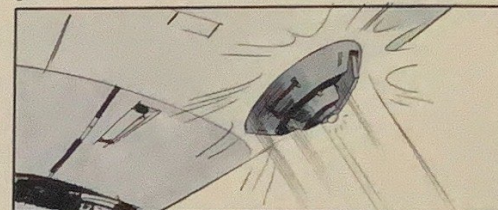
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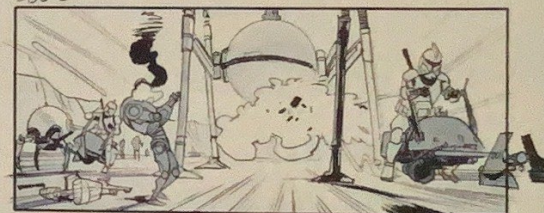
380 B

15



MAGNETIC DETINATOR ATTACHES TO SPIDER DROID

380 C



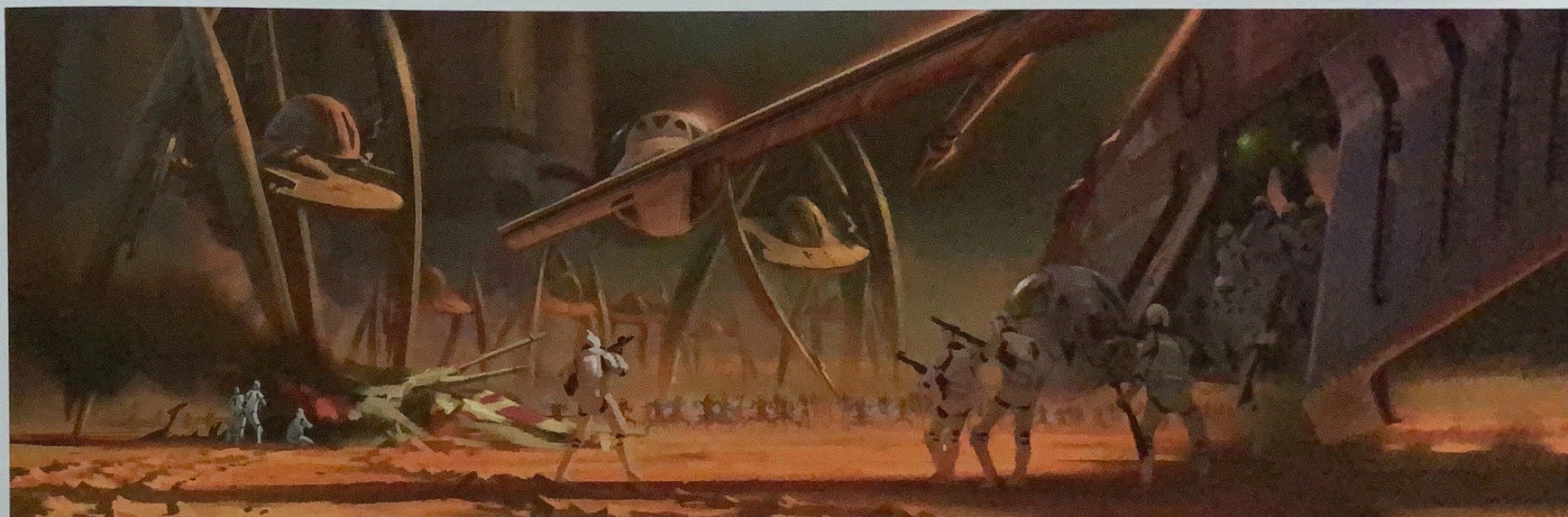
TRUCKING BACK W/ SPEEDERS GAINING ON DART,
SPIDER BLOWS UP IN BKGD WHILE BIKES SWERVE AROUND
BLASTED PEDDS.

CONT'D



CONT'D TRUCKING BACK - LAST
BIKER EXITS SHOT W/ SPIDER
IN FLAMES IN BKGD

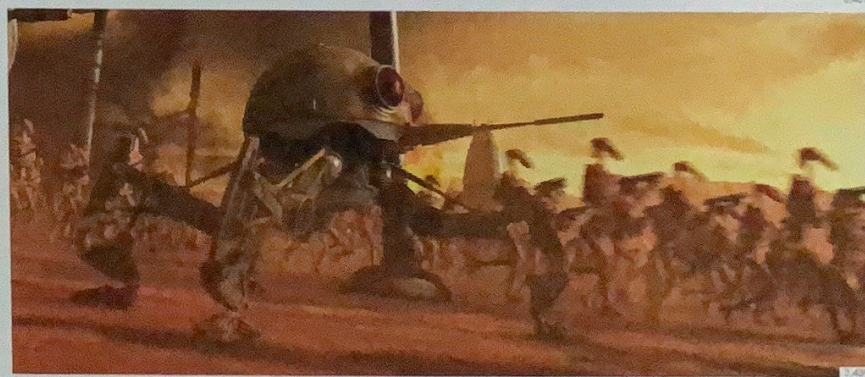
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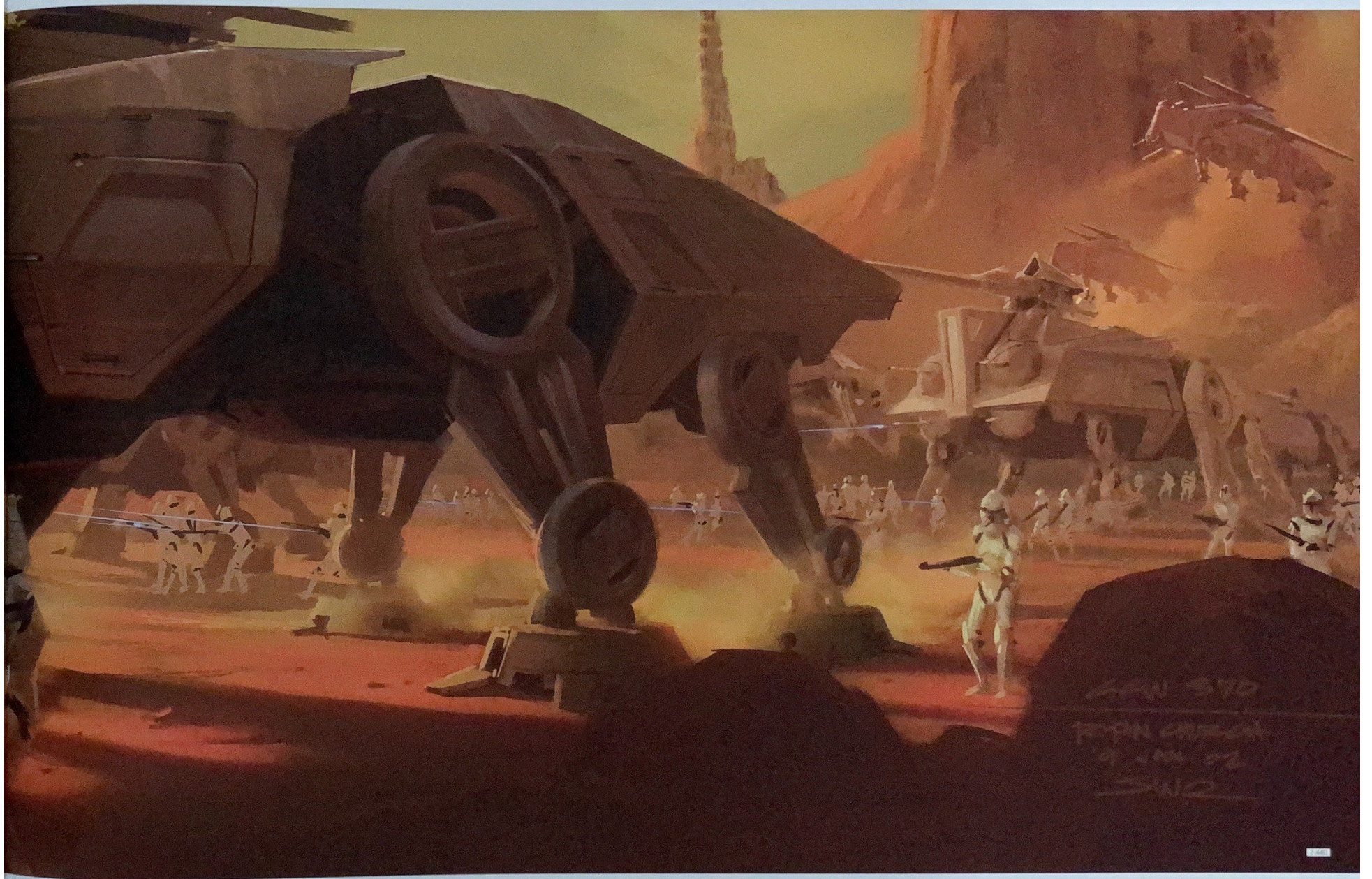


0.439



0.439







in the film, I'm not sure the audience will follow it; but it was very helpful to us in understanding what was happening at each point on the assembly line and in each area of the factory.

Erik Tiemens Once the animatic incorporated the footage from London, and it's cut and in sequence, then we would point over that to give it a lighting and mood guide for ILM to do the finished work.

The backgrounds and machines were a combination of digital and real models. The miniatures for the droid factory walls and foundry were filmed by the Muren/Snow unit between October 16 and December 13, 2001.

Ben Burtt developed the sound design for the factory equipment.

Ben Burtt The droid factory sequence required practically every bit of machinery we've ever recorded, including machines we'd recorded as far back as *The Empire Strikes Back*.

Cross-Eyed Yoda

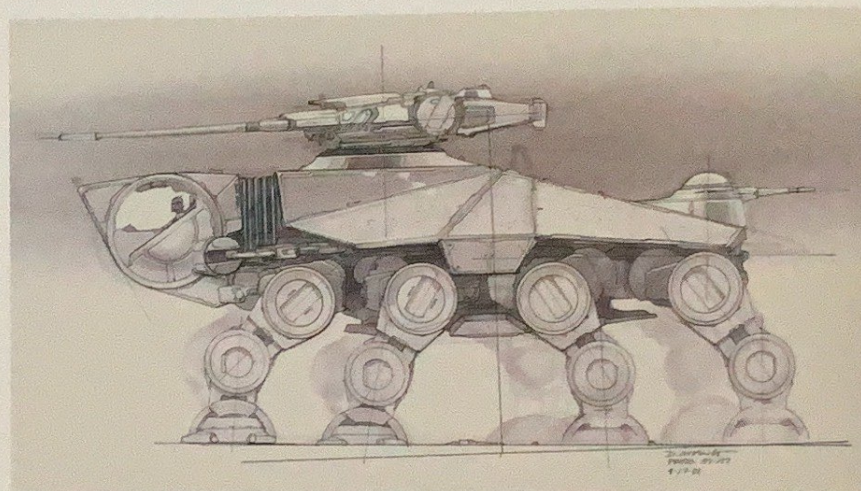
George Lucas The secret of Yoda is to make him look like a rubber puppet.

Rob Coleman If you look at *The Empire Strikes Back*, and we took our tests from *Empire*, you can see that there were four puppets with differences between each: There's fat-lip Yoda. There's pointy-head Yoda. There's lime-green Yoda. And there's cross-eyed Yoda. So our Yoda is a hybrid. He's more of the essence or the memory of Yoda as a being.



"Someday you're going to be able to do everything you can do with models on the computer, but we're not there yet."

Dennis Muren / Visual Effects Supervisor



We animated him without the rubber jiggle in the face, and it didn't look like him. You missed it, so we put it in. We also realized, from the way that Frank Oz had his fingers in the puppet—a thumb down in the bottom lip, three fingers in the top lip, and one finger up on the brow—that Yoda couldn't formulate vowel sounds. We were over-articulating. So we dialed back, and it started to fall together.

For his movement, Frank said I should be thinking about how sore he is. He said when he was puppeteering it he always was concerned about Yoda's back and his neck hurting and his feet hurting. He's this 800-year-old guy and he said that I was making him look like he was only 400.

George Lucas He doesn't look a day over 403.

Rob Coleman Frank told me that anytime he moved the puppet anywhere, when he got to the end of its movement he would put a little breathing in, like it had been an effort for him to get there.

While animating we also have to remember who he is inside. We may even want to have a sense of this character thinking. What's the subtext of the scene? What's actually going on in his head? We need to think about who he is and why he's in that scene, and why he is in that shot.

- 3.435 Ryan Church concept art for tri-droids. Destroyer droids are depicted to give a sense of scale.
- 3.436 Rodolfo Damaggio's storyboards show a clone use a magnetic deflator and escape on his speeder as the droid explodes.
- 3.437 Concept art from Ryan Church depicting clones emerge from their gunship to face the mighty droid enemy (April 9, 2001).
- 3.438 Final frame showing spider droids, supported by super battle droids, fire upon the clones.
- 3.439 A dwarf spider droid joins the fray alongside battle droids.
- 3.440 Ryan Church's epic concept of the clones going into battle supported by clone walker tanks (January 9, 2002).
- 3.441 A Ryan Church concept for Republic drop ships that can fly in and deploy a clone walker tank.
- 3.442 Chief pyrotechnics engineer Geoff Heron and visual effects supervisor Dennis Muren discuss the best way to blow up a clone walker tank scale model.
- 3.443 Doug Chiang's concept for a clone walker tank, which he labeled a "Proto-A1-A1" (April 17, 2001). It has the same articulated leg concept as Joe Johnston's designs for the A1-A1 in *The Empire Strikes Back*, albeit with a lower center of gravity.
- 3.444 Final frame of a clone walker tank being deployed and heading into battle.
- 3.445 Concept art by Ryan Church for shot GTW 525 showing a clone walker tank firing upon the droid army, with an intimidating core ship in the background (January 14, 2002).



3.446 Erik Tiemens's concept features the hailfire droids returning fire on the clone army (February 20, 2002). Their large wheels enable the hailfire droids to move at speed and they can carry a huge array of weaponry.

3.447 Ryan Church's concept for a gun droid with three angular wheels for it to rotate and fire in any direction (April 20, 2001).

3.448 Ryan Church's concept for shot GCW 525 shows the clone assault as core ships take off (February 7, 2002).

I found out about the Yoda/Dooku fight the day I received the script, June 24 of the year 2000, which was three days before we started shooting. I don't think I slept for the first three weeks after reading that. I tried to talk to George about it and I wasn't able to.

I'm already studying martial arts videos and different schools of martial arts around the world, from India and China and Japan, and trying to figure out how to apply that to a three-foot little guy, and how do you make that believable? That's my current task because we don't want people to laugh because it looks artificial. It has to be rooted in reality.

Seeing *Crouching Tiger, Hidden Dragon* (2000) helped me feel more comfortable about the fight scene. I came up with all kinds of solutions: he can hover, he can fly, he can create multiple versions of himself. And George was saying, "No, no, no." Every time we showed it to George, he said, "Amp it up! He's got to be bouncing around!" He kept saying, "He's a frog, this wicked-ass frog that's going to kick it." From what I could tell, George was asking for the Tasmanian Devil.



3.447



3.448

It was more about how quickly Yoda would move around Dooku, to throw him off balance or throwing him off his fight. And to me it just seemed to be such a juxtaposition — I'm trying to make this character move slowly because his bones hurt, and his head hurts and he's 800 years old, and then he turns into this little fighting machine.

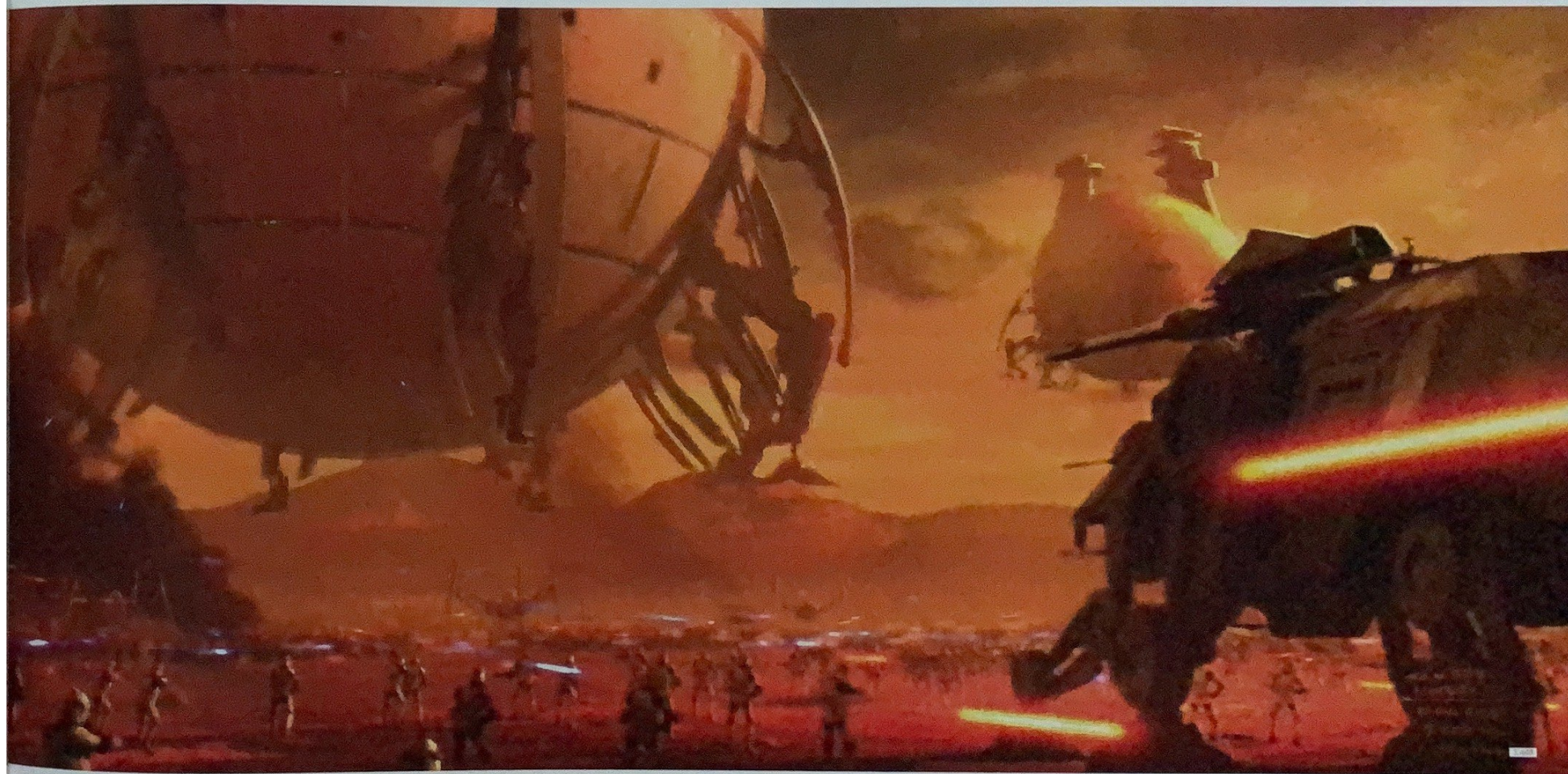
I talked to George about the possibility of Yoda almost being stationary and using the Force around him to fight, moving things, or having an energy pulse come out from him. I brainstormed with Ahmed Best in Sydney for several days on how he might be able to do that — Ahmed had some great suggestions. I have all those notes and am ready to talk to George when he's ready to talk about it. It's a complex scene. It is an anxiety.

Pablo Helman We all fought it a little bit, because it didn't fit with our idea of Yoda as this aged creature who walked with a cane. But then we started to think of it as a situation where he pulls all his strength together for this fight — just like real people do when they have an adrenaline rush — we all eventually bought into that idea.

Rob Coleman After getting a general sense of the scene from George, I got together with Tim Harrington, one of my best animators, and said, "Okay, Tim, we're going to figure this out." We started moving Yoda very quickly; but as we showed that animation to George, he wanted him to move faster and jump higher. We just kept working on it, with Tim doing most of the shots himself. There was no moment of epiphany, no moment of, "Hey, we got it!" We just gradually got there.

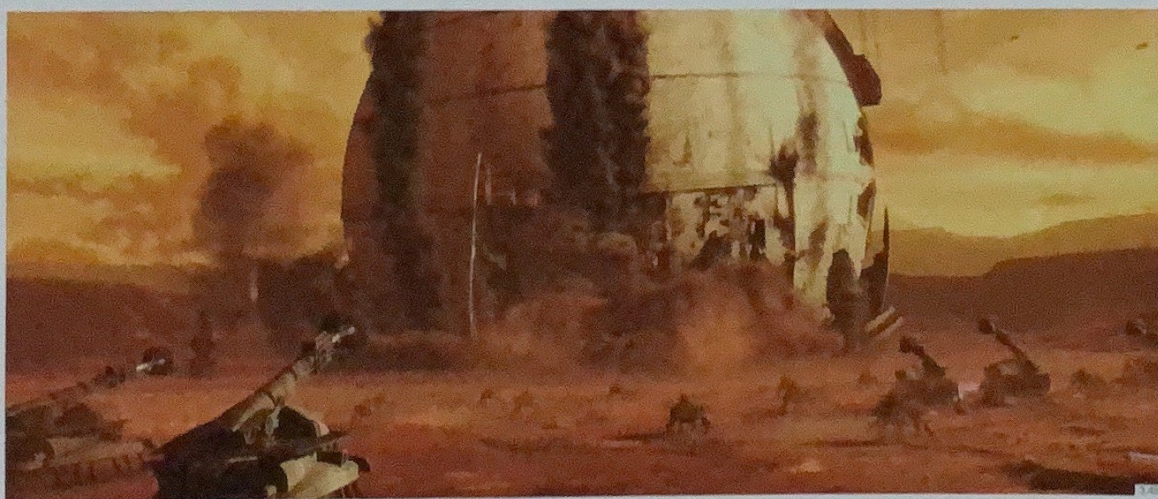
***“To sum up the action, to encapsulate that moment—
that’s what a production illustrator should do.”***

Ryan Church





3.442



3.440

3.440-450 As a core ship rises it comes under heavy concentrated fire from the multiple artillery tanks, is critically damaged, and comes crashing down to Innuluanus effect.

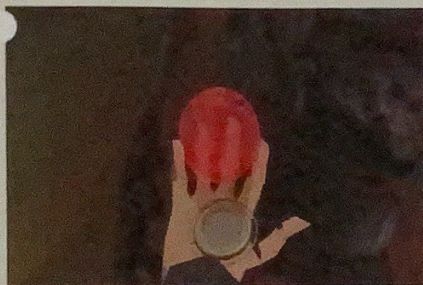
3.451 After the destruction of the core ship, Ryan Church's concept shows the clone troopers advancing to finish off the remaining droids (April 9, 2001).

3.452 Erik Tiemens's concept for shot 61W 556 shows the clone troopers going into battle. This is the attack of the clones, and a key image for George Lucas when he conceived the story. The clones advance and fire just like the battle droids, visually indicating that there is no difference between the two sides because they are both controlled by the Emperor.



“By hinting at the Death Star plans, I was able to connect this movie to the others. It was a little icing on the cake, but it wasn’t really what the scene was about. The scene was about trying to keep Dooku and his cohorts alive and present during the battle scene.”

George Lucas



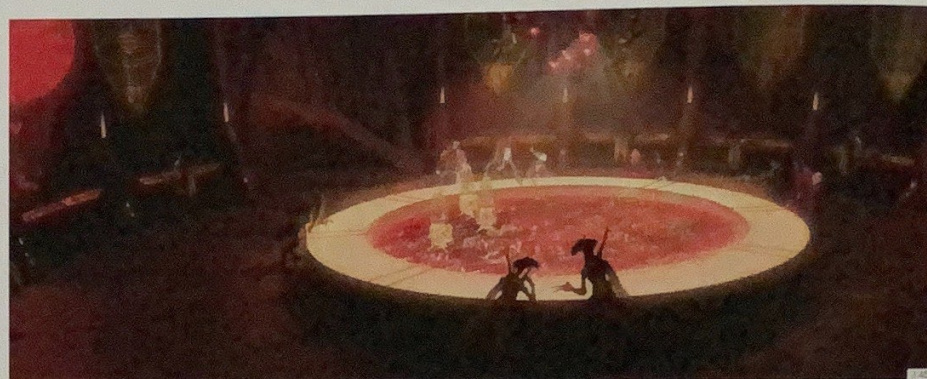
RESHOOT FINAL January 11, 2002

GCW 962

REEL 6

Insert of hologram in Dooku's hand.

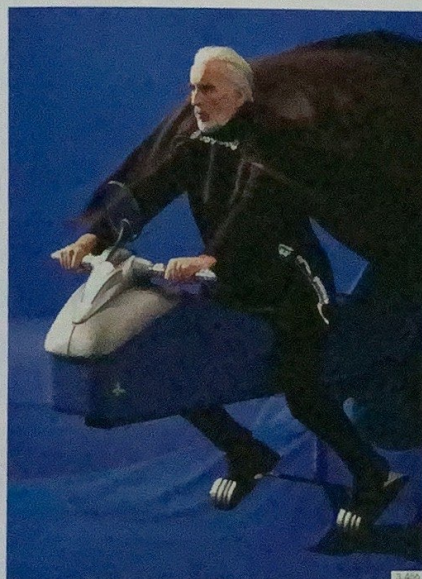
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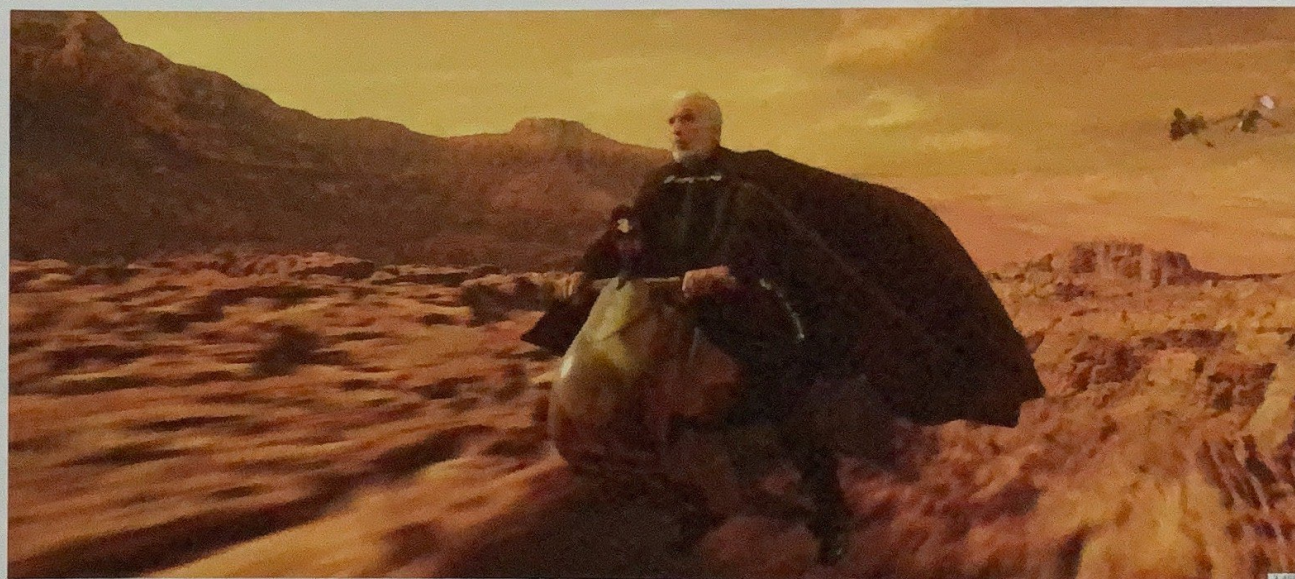
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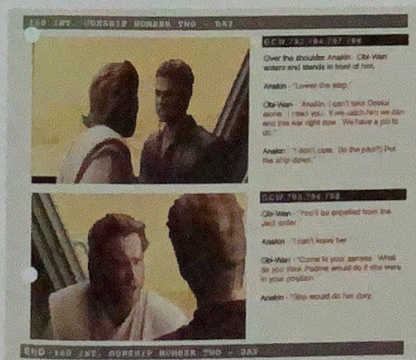
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3.450



3.451



3.457

George Lucas If the 30 artists I had working on that character couldn't pull that off, I was dead. Yoda was the whole climax of the movie.

The Clone War

Todd Busch/First Assistant Editor The original script was vague about what occurs outside the arena. In May and June 2001, George put the art department to work, and in July the Clone War got fleshed out with animatics.

Rick McCallum They were churning out 30, 40 shots a day. After a week, you've got almost 200 shots. And it's amazing how much you can play with that.

Rob Coleman When we saw the animatic of the Clone War I had goosebumps. I rarely get that from an animatic because animatics are rough. It had everything that we as

teenagers of the late 1970s and early 1980s saw in those original movies.

Ben Snow I wanted to build a clone suit. It makes a lot of sense when we have a clone talking to an actor, for example, but George said, "This morning you showed me a CG R2-D2 that looked absolutely believable. It's fine. You'll be able to do it." He and Rick love throwing down the gauntlet like that.

The team had to animate thousands of clones for the film's climactic battle scene. Every clone on-screen was computer generated, animated using motion capture data. Character models, based on the dimensions of Temuera Morrison, were used to generate the clones' bodies.

Rob Coleman They look like stormtroopers, but they were all 100 percent CG. There were no people in suits.

3.453 Shot GCW 962 is an insect of Dooku's communicator, which contains the blueprints for the Death Star. This was the penultimate shot filmed on February 1, 2002, the last day of shooting.

3.454 Erik Tiemens's concept for the Geonosis command center hangar, from where Dooku makes his escape (December 14, 2001).

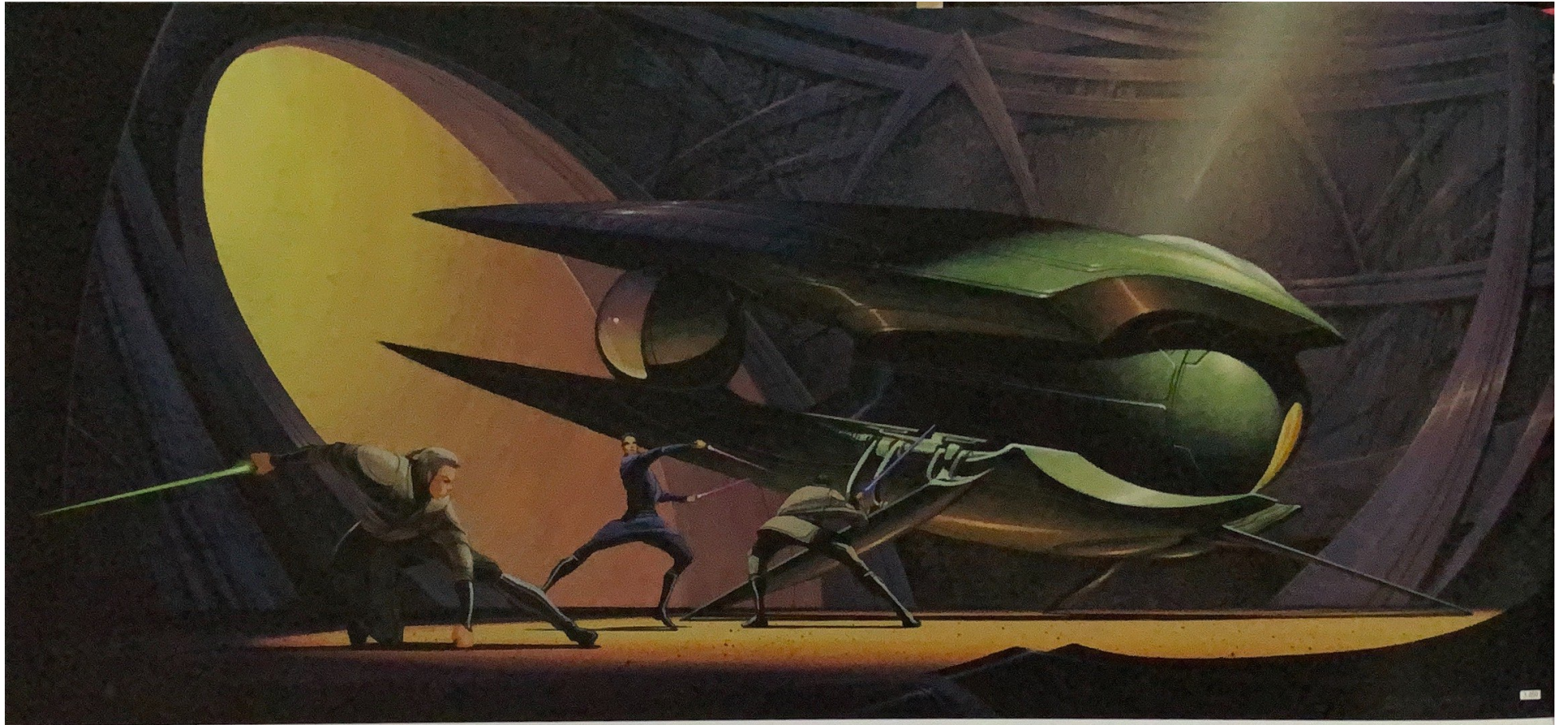
At right are Dooku's speeder and two Geonosis starfighters.

3.455 Inside the Geonosis command center Poggle the Lesser and the Separatist leaders discuss the progress of the battle. Count Dooku offers to take the Death Star plans (even at left) to his master to ensure their safety.

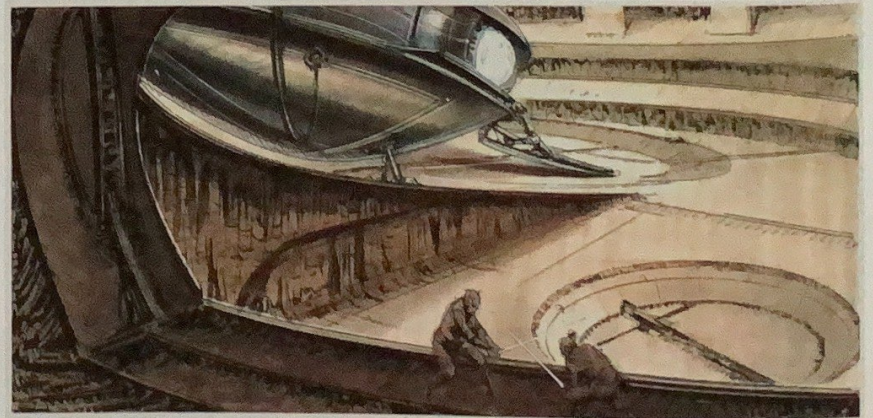
3.456 Filming Christopher Lee astride his speeder bike, a wind machine swishing his cloak.

3.457 During the pursuit of Dooku, Padmé falls from the gunship and Anakin's first response is to go back to save her. In the shooting script Obi-Wan urges them to go on and Anakin sees Padmé get to her feet before agreeing to continue. This shot for scene 16b, prepared for the reshoot on January 13, 2002, Anakin has an idea about Padmé's condition but Obi-Wan asserts that Anakin must do his duty, just as Padmé would have done here had their situations been reversed. This scene crystallizes the theme of duty versus love that permeates the movie.

3.458 Final frame showing Count Dooku's escape to his secret hangar. In the background the pursuing clone gunship, which is without rockets, is under attack from the Geonosis starfighters.



3.460



3.461

"The idea of Count Dooku's ship is that it's closed up like a water beetle. When the wings are ready to deploy, they shoot out along tracks and the sails open up like parachutes, only horizontally. And the solar winds propel it."

Carol Bouman / Concept Model Maker

On August 6, 2001, the title for Episode II was announced: Attack of the Clones.

John Williams met Lucas in September to discuss the film's score scene by scene in preparation for scoring the film.

John Williams George said, "Why don't you make a love theme like the old Hollywood movies?" It's introduced gradually when Anakin and Padmé are reunited not as lovers but as acquaintances at the beginning of the film. Five films with this huge glossary of themes but we have no love theme. So now we have...

Five days of pickups were undertaken at Ealing Studios from November 1 to 6, 2001. Some of the shots were to cover edits. For example, the scene where Padmé puts the coverings on C-3PO was cut, so the earlier scenes where C-3PO was shown uncovered were performed by Anthony Daniels in costume in front of a blue screen so that they could be composited in by ILM. Also, as scripted, Anakin is introduced when he and Obi-Wan meet Padmé in her apartment. Lucas wrote and shot an additional scene that precedes it, with Obi-Wan and Anakin in an elevator, with Anakin nervous about meeting Padmé again.

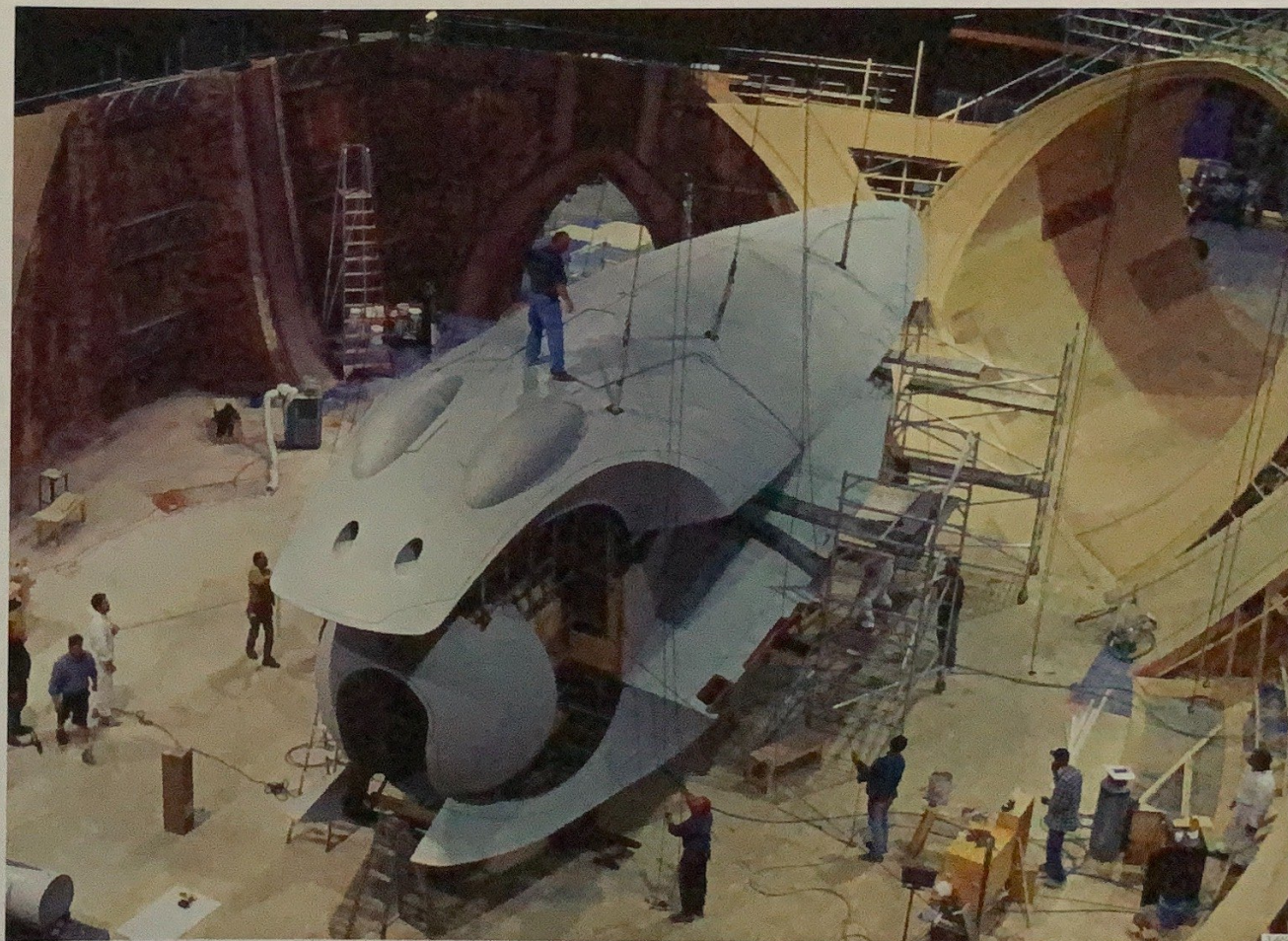
A day of pickups were shot at Elstree Studios on January 15, 2002. These were single shots and new dialogue for the end battle including Anakin asking Padmé, "You call this diplomacy?" and her reply, "No, I call it aggressive negotiations." Also shot was the scene in the gunship, after Padmé has fallen from it onto the dunes, where Obi-Wan has to persuade Anakin to join him in the fight against Dooku; the scene highlights the conflict Anakin has between following his personal desires and carrying out his duty to society.

John Williams recorded his score with the London Symphony Orchestra from January 18 over a period of 13 days, and then a final day of filming took place on February 1 at Elstree Studios.

3.489 Doug Chiang's concept for the battle with Dooku in the secret hangar that houses his solar sail ship earned a "Fabulous" from *News* (April 25, 2000, 5 days). It is suggested here that Dooku fights using two lightsabers.

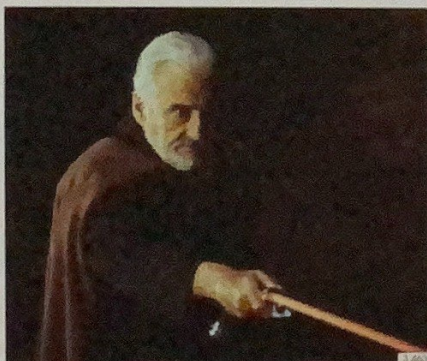
3.490-491 Ed Natividad's set concepts for the secret hangar (March 19 and 20, 2000).

3.492 Constructing Count Dooku's solar sail ship on Stage 2 at Fox Studios Australia in preparation for filming the first scene in the Dooku Jedi battle on August 21, 2000.



"I had to commit to a digital Yoda because I couldn't get the end scenes with a puppet. It just wouldn't work throwing a puppet around. So we put extra energy into it, and about nine months after we finished shooting we saw the first Yoda, and it was a great thing."

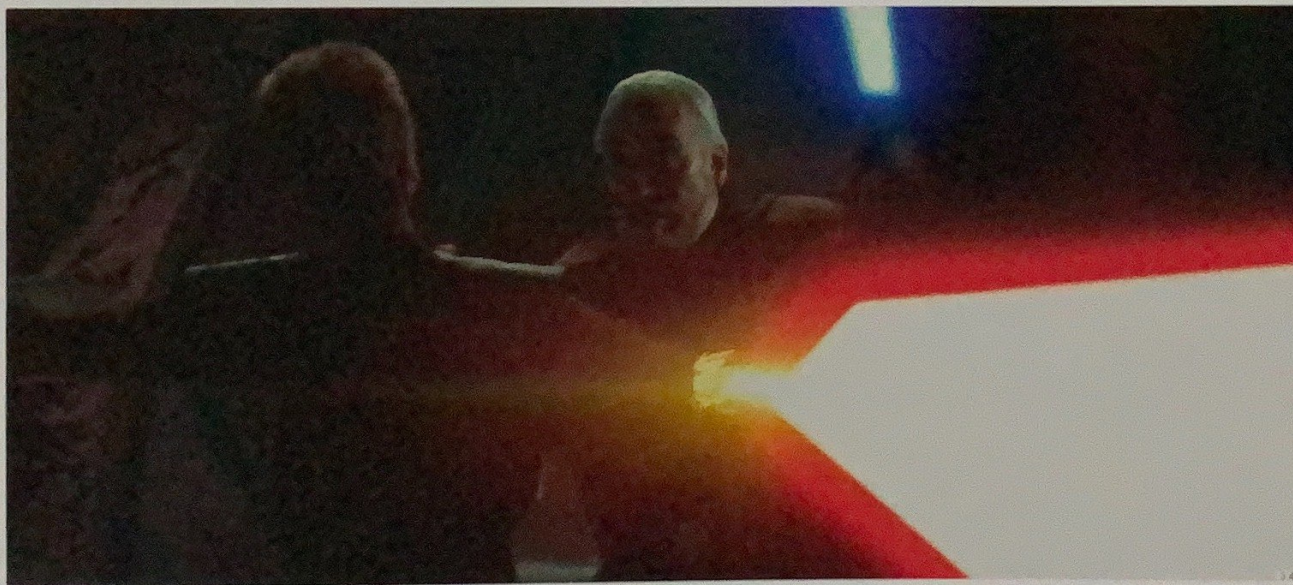
George Lucas



Lucas shot a scene with Dooku, Nute Gunray, and the Separatist leaders in the Geonosis command center, at the end of which Poggle the Lesser hands over the blueprints for the Death Star to Dooku.

Film-Out

David Tattersall When you looked at the image on the monitor on set it looked great. When projected digitally it was better than film, because it was a direct clone of the original, but it was not as good as we saw on the monitor because digital projection was about two years behind in terms of development. Although we shot the movie digitally, we still needed to transfer it to film for it to be projected at theaters. When you put that image through the normal film processes, the third-generation image was degraded and not that good, to be honest.



Mike Blanchard The last piece of the puzzle to solve was how were we going to make film distribution prints from our digital original. We were all getting concerned because we couldn't get the film prints to look as good as our digital version. The quality of the prints coming back from the labs just wasn't good enough.

So, we thought, "What if we printed an entire reel from the digital file and used that as our printing negative?" Instead of doing a film-out of an original negative and going P-11-release print, we went from our original neg to release print, skipping those two generations.

We did the calculations of how long it would take to do this, and explained it to Rick and George. The prints looked much better, but the trouble was that a 2000-foot reel takes 60 hours to film-out on ILM's laser recorders, and we needed seven negs of each reel—six for the US release, and one for international releases so they could put on subtitles. Each neg could produce about 1,000 prints. ILM also needed to produce 22 foreign language versions of the Star Wars title crawl. Seven seven-reel films are 49 reels total, and to film-out on two recorders would take just over 60 days if they ran continuously without issues.

We worked out a schedule of when George needed to finish each reel to make the deadline. We had this chart on a big magnet board in the Main House saying when each reel had to start printing. George loved it. He would say, "Guys, there are 20 shots in reel one that we don't have finals yet from ILM," and then the focus was to close out that reel so we could start to film-out.



DOOKU SENDS OUT A ENERGY BOLT



YODA REFLECTS IT BACK TO DOOKU

3.404



DOOKU REFLECTS IT...



DOOKU DEFLECTED HIS LIGHTSABER WALL

3.406



3.405

3.403 Christopher Lee is ready for battle. Lee: "I've probably done more sword fights on celluloid than any actor in history, and I've got the scars to prove it. And this fight is greater than anything I've ever been involved in. You notice the phrase I used—'I've ever been involved in'—because I don't do all that much of it. I physically can't. My hands and my arms will move very fast; my legs can't, not anymore. Most of it is done by my stunt double, who is absolutely superb."

3.404 Count Dooku is more than a match for Anakin and severs his right arm.

3.405 Obi-Wan battles Count Dooku but takes cuts to his leg and arm and cannot continue.

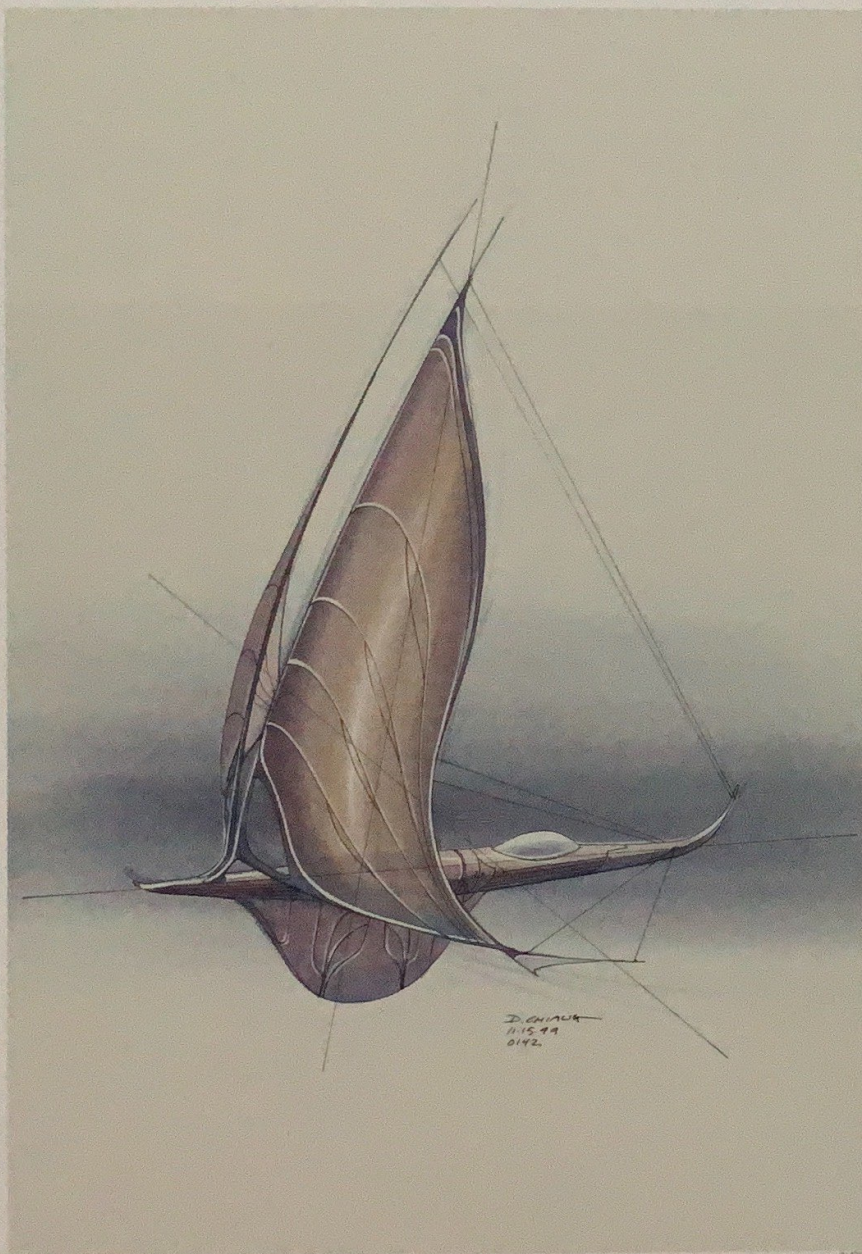
3.406-407 Rodolfo Damaggio's storyboard shows the Sith Lord unleash an energy bolt, which is reflected back by Yoda, and Dooku has to deflect his own bolt away. In the bottom board Obi-Wan and Anakin can be seen lying on the floor, defeated.

3.408 Their skills using the Force evenly matched, the confrontation between Yoda and Dooku now depends upon their proficiency with a lightsaber.

3.409 Final frame showing Yoda holding the masonry that Count Dooku has dropped on him using the Force.



3.406



3.470

Rick McCallum We are, in effect, going to release over 3,000 first generation prints, which has never been done in the history of cinema, ever.

Mike Blanchard Sometimes there were technical problems during the film-outs so we'd have to run it again. One time, it was a power failure. As we were finishing in post, we were getting power outages multiple days in a row. It was grim. We ended up having to hook up a generator in the parking lot at both ILM and the Ranch so that, no matter what, George's cutting room and the film recorders would be able to keep working during the power outages.

The final sound mix commenced on March 4, 2002.

Ben Burtt The final mix lasts for about a month. We go into a dark room every day and we listen to every sound and every bit of music and every bit of dialogue and we inch our way through each scene, sometimes only completing a few minutes a day.

Rick McCallum On April 8, ILM delivered the last shot and George signed off on it. On April 10, George and Ben delivered the final cut of the film complete with sound effects and John Williams's music.

Attack of the Clones was released in cinemas on May 16, 2002, making \$80,027,814 on its opening weekend in America and grossed over \$653 million worldwide.



3.471

Mike Blanchard There was no digital distribution channel available for Episode II, so we had to figure out how we were going to get the movie to the cinemas. Everything had to be treated like it was a one-off. We needed a team of people from THX to go to all these digital cinemas—there were about a 100 or so worldwide—and load the servers. We made a file DVD, they transferred that onto the cinema's server—encrypted, of course—then that would play out to the projector.

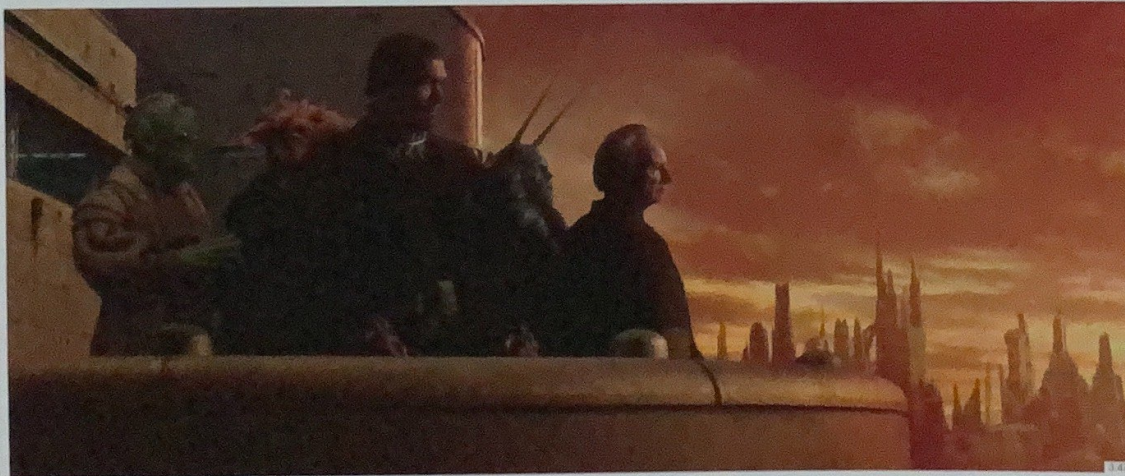
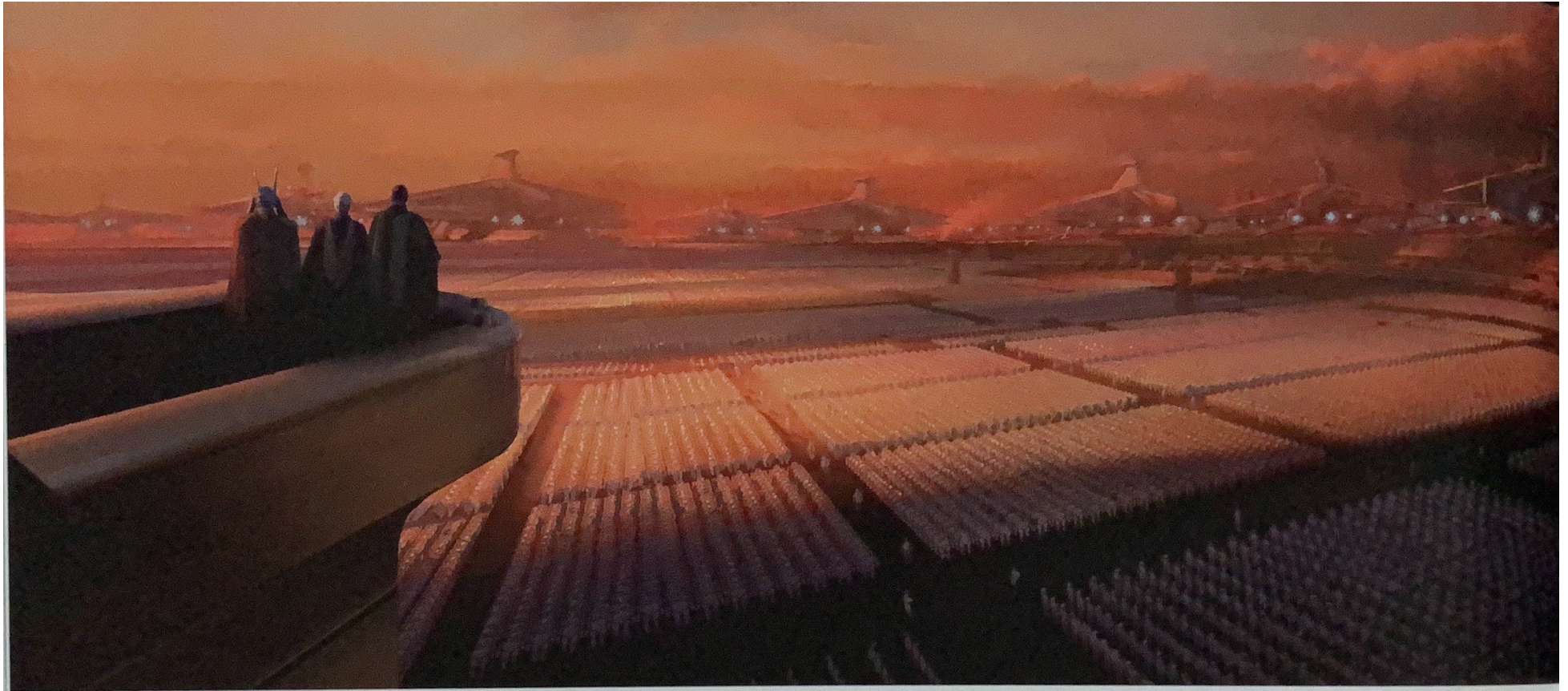
Rick McCallum You have to be pretty brain-dead to be involved in film at this time and not realize that we are going through a very serious evolutionary step. Digital technology really gets down to one simple fact. A writer can write anything he wants to now. A director is only limited by his imagination. A producer can't say "no" anymore, because now there is a way to solve each production challenge and to do it in a cost-efficient, fiscally responsible way. It doesn't mean that by using the technology that the film is going to be any better—that's still about talent.

George Lucas Film has been around 100 years, and no matter what you do, you're always going to run celluloid through a bunch of gears. It's gotten more sophisticated over the years, but it'll never get better than it is right now. With digital, we're at the very bottom of the medium. This is as bad as it's ever going to be. This is like 1895. In 25, 30 years, it's going to be amazing.

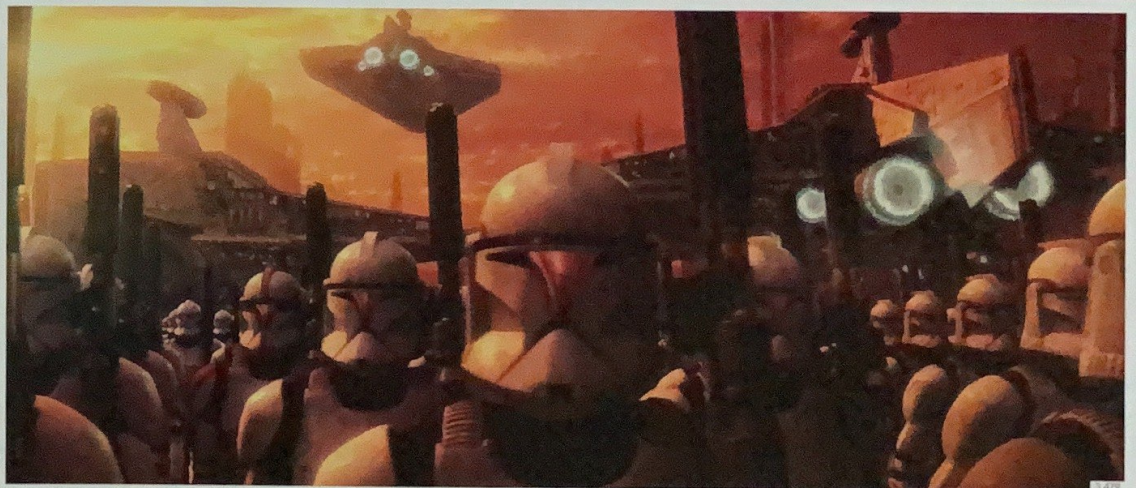
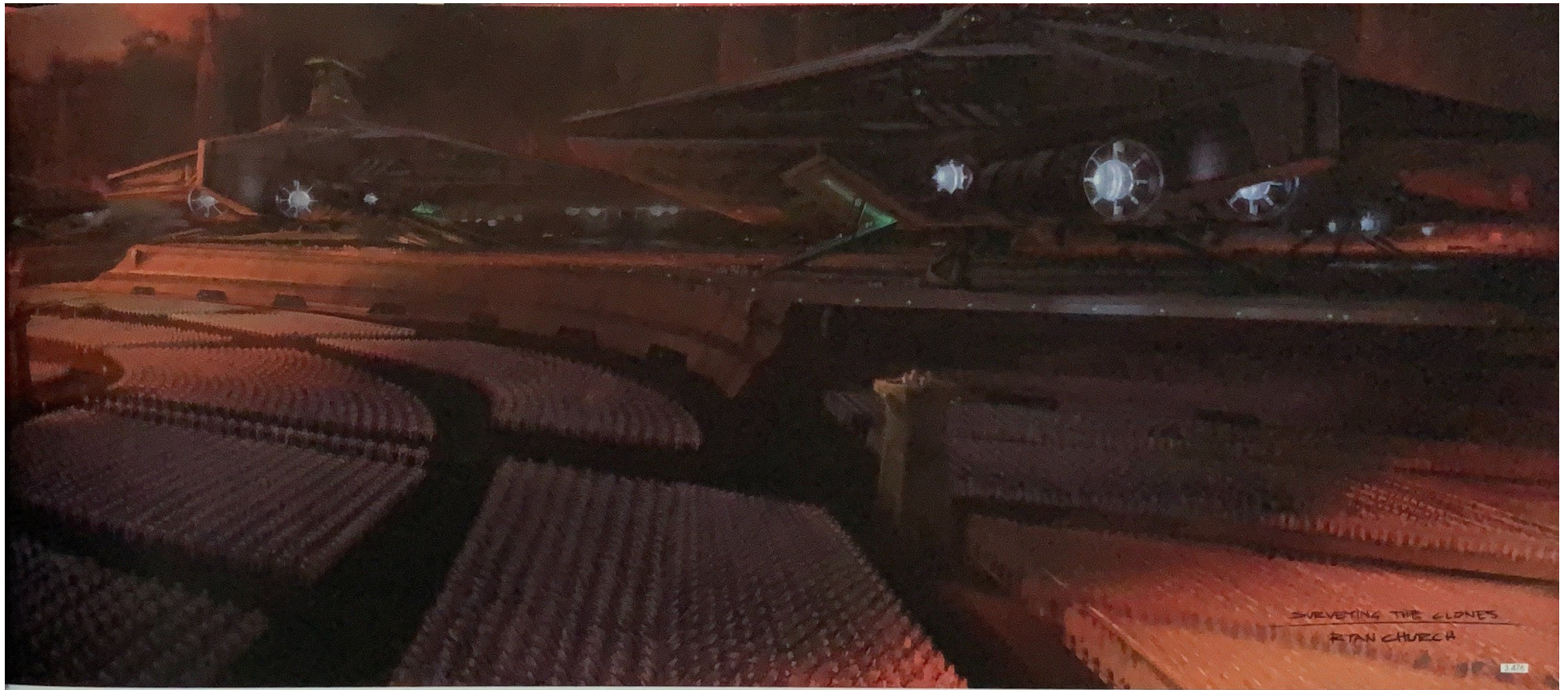
It's like we're the wild fanatics for wanting to change things, when this is the biggest leap forward for the business since the advent of sound films. I will never make a film with film again.



3.472



- 3.476 Ryan Church's concept art showing Palpatine surveying the clone troops, in formation, preparing for the war ahead (September 26, 2001).
- 3.477 In the final frame Bail Organa (Jimmy Smits, center) and a number of senators join Chancellor Palpatine overseeing the troops. Count Dooku has said that some senators are controlled by Darth Sidious but we do not know which ones.
- 3.478 In this final frame the Republic assault ships move out to start transporting clones to war. The ships' design is a forebode of the Imperial Star Destroyers.
- 3.479 Final frame showing the assembled clone troopers ready for action.





"I think I can safely say that I will never, ever shoot another film on film....It's inconceivable to me to go back to that method of working."

George Lucas

or not they're going to do it, but they've finally realized that they're part of a symbiotic relationship.

And it's the same in politics—we're all in a big symbiotic relationship with the rest of the world. As soon as one country says, "We're the only thing that's important, they aren't important," you start pulling threads that tear the world apart. They don't realize that when you shoot yourself in the foot, it hurts. How are we going to run the country without migrants? Didn't anybody tell you that they're the ones that do all work?

Paul Duncan Corporations and states are man-made systems that seem to be more concerned about themselves rather than the people they were created to serve.

George Lucas I made that movie a while back but it's basically what's going on right now. America needs trade with China and other countries, but if we pull out, you're going to have problems with the farmers in the Midwest who depend on that trade. If you rip down the synergistic circle in the end you're going to end up with nothing. Somebody's got to put it all together again because it doesn't work.

Paul Duncan In the past, when people have been afraid, the same sort of nationalistic feelings have come to the surface and been manipulated. George Santayana wrote that "Those who cannot remember the past are condemned to repeat it." Do you think history is due to repeat itself?

George Lucas History repeats itself over and over again. There's no question about that. It's just: Which direction is it going to go?

Are we going to end up with a bunch of little wars as trade breaks down, they all get greedy and they start a fight? Eventually, after a lot of pain, whether it's a world war or just a lot of civil wars, they'll all come to the realization, "This is stupid. Let's just not do this, let's just try to help each other." We've become so globalized and the financial ecosystem is so intertwined that we feel the effects very quickly. Leaders around the world think they can do things by themselves, but they can't.

Paul Duncan What's needed are leaders, voices, ideas becoming prevalent to affect positive change.

George Lucas Life is a pendulum. We have the dark side and the light side. We're going over to the dark side, everybody is saying "Oh my God," and we have to start pushing together to slow it down, then keep pushing it back to get to the light side. But it's human nature to not do anything, to wait until things get so bad that they are forced to do something, before pushing back.

Paul Duncan So it's part of a cycle that we have to be near destruction before we join forces to save ourselves.

George Lucas The thing is it's going to be all over for all of us in a few million years, and so we have to figure it out by then that we can't save ourselves individually. We're told that competition is good, so does this mean that a quarter of the people are going to live and the rest are going to die because they lost? No, you need all the people. You need the whole ecosystem to work together.

Paul Duncan It takes a lot of people to build the ark.

George Lucas Yeah. And it needs to be done through reason, love, and compassion, not through force.

The films are trying to stress the idea that everything is interconnected. I like to make movies that are complex, but it's not obvious to people unless they start digging into it. Most people don't realize it and can't grasp the whole entity because they're focusing on four or five pieces out of 200, and often they don't want to hear about the other pieces because it requires additional thought and ideas outside of the films.

There are cycles and circles in the story and the characters throughout all six episodes. There are cycles of the same thing being repeated over and over with different groups of people, and the outcomes change because the characters have grown or changed over the story. The repetition shows the characters' development.

It's subtle. I don't think most people realize that it's even going on, but if you look for it, you'll see it.

3.480 In this final frame set on Naboo, Anakin and Padmé marry in secret, their only witnesses the druids C-3PO and R2-D2.

3.481 The kiss.

3.482 Lucas staged this romantic moment so that when we see the close-up of Anakin's metallic prosthetic grasping Padmé's hand it adds a premonition of dread and foreboding to the proceedings. This shot was added for the digital release of the movie.

3.483 The Italian poster design for Episode II emphasizes the love story between Padmé and Anakin while also acknowledging the film's other major characters.





Revenge of the Sith

Episode III: Revenge of the Sith (2005)

Synopsis

Three years after the onset of the Clone Wars, the noble Jedi knights have been leading a massive clone army into a galaxy-wide battle against the Separatists. When the sinister Sith unveil a thousand-year-old plot to rule the galaxy, the Republic crumbles and from its ashes rises the evil Galactic Empire. Jedi hero Anakin Skywalker is seduced by the dark side of the Force to become the Empire's new supervisor—Darth Vader. The Jedi are decimated, as Obi-Wan Kenobi and Jedi Master Yoda are forced into hiding. The only hope for the galaxy lies in Anakin's own offspring—the twin children born in secret, who will grow up to become Luke Skywalker and Princess Leia Organa.

RELEASE DATE MAY 19, 2005 (US)
RUNNING TIME 140 minutes

Cast

Obi-Wan Kenobi EWAN MCGREGOR
Senator Padmé Amidala NATALE PORTMAN
Anakin Skywalker HAYDEN CHRISTENSEN
Supreme Chancellor Palpatine JAMIE DOAN
Mace Windu SAMUEL L. JACKSON
Senator Bail Organa JIMMY SMITS
Yoda (voice) FRANK OZ
C-3PO ANTHONY DANIELS
Count Dooku CHRISTOPHER LEE
Queen of Naboo KESHA CAVALE-ROUSSEAU
Ki-Adi-Mundi/Viceroy Nute Gunray BRAD CARSON
Commander Cody TEMUELA MORRISON

Jar Jar Binks AHMED BEST
R2-D2 KENNY BAKER
Chewbacca PETER MAYHEW
Sio Bibble CLIVER FORD BAKER

Crew

Director GEORGE LUCAS
Producer RICK MCCALLUM
Screenplay GEORGE LUCAS
Executive Producer GEORGE LUCAS
Production Designer GAVIN BOCCUET
Director of Photography DAVID PATTERSON
Editors ROGER BARON, BEN BURTT
Costume Designer TRISHA BIGGAR
Concept Design Supervisors RYAN CHURCH, EMILY REYNOLDS

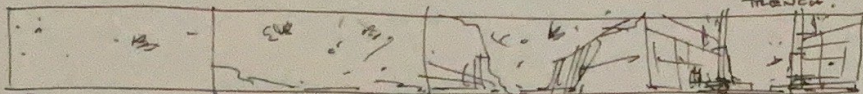
Visual Effects Supervisors JOHN KNOLL, ROGER RUYFF
Animation Director ROB COLEMAN
High Definition Supervisor FRED MEYER
Sound Designer BEN BURTT
Music JOHN WILLIAMS



ACT 1

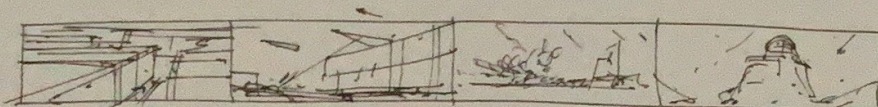
STAR FIELD

ANCIENT
DEATH STAR
TRANCH



1

POLIS MAZTA

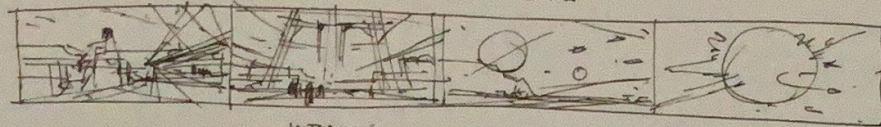


ANCIENT TRENCHES

POLIS MAZTA

ATMOSPHERIC
DUST EXPLOSIONS

GIANT FIGURES



INTERIOR

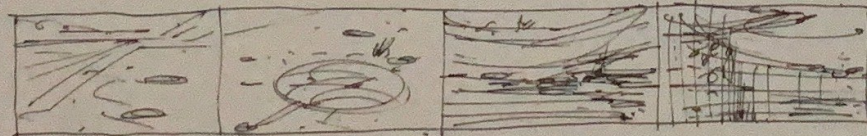
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FELUCIA



CRYSTAL WORLD



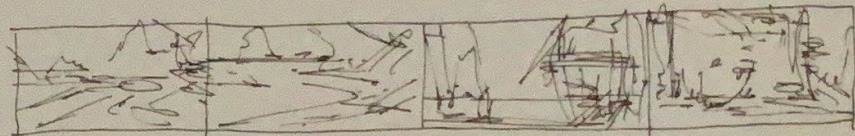
SINK HOLE

* ADD 4
MORE FRAMES

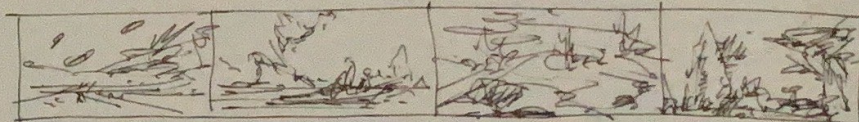
ACT 1 CONT...



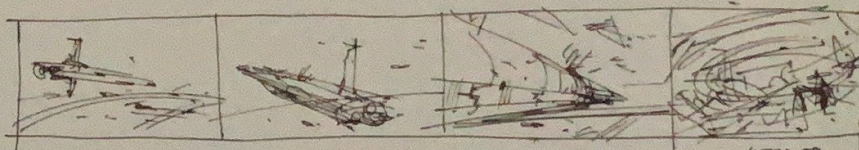
BRIDGE WORLD



KASHYK

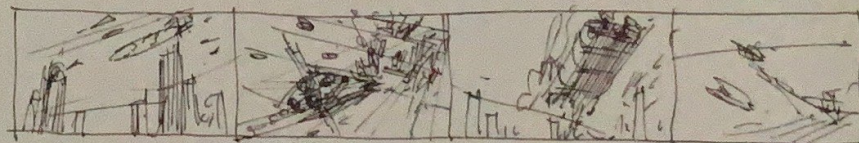


KASHYK

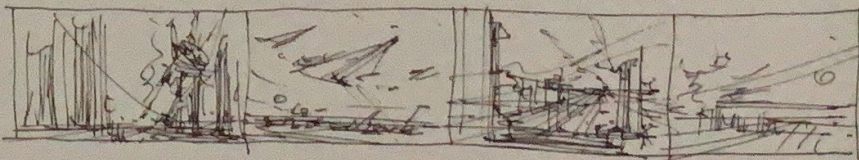


CORUSCANT

INTERIOR
SHOT
+ BEYOND



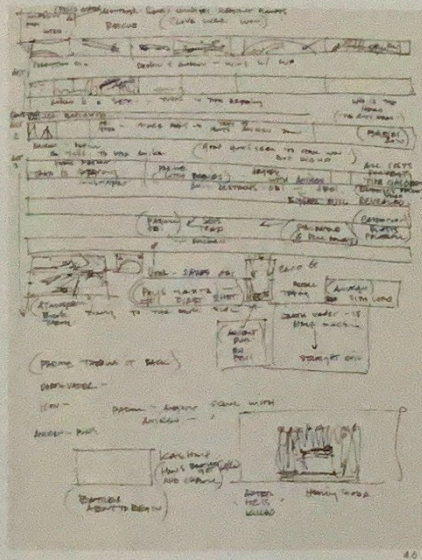
CORUSCANT



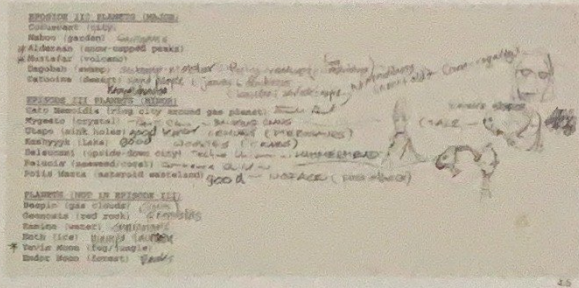
CORUSCANT

Mandala

By Paul Duncan and Colin Odell & Michelle Le Blanc



- VADER KNOWS PRIME background - but not HANA
- ANAKIN BECOMES DARK VADER
- ALL JEDI DIE except YODA & OBI WAN
- PADME HAS TWINS
- TWINS HIDDEN FROM VADER
- EMPIRE CHALLENGES
- PALPATINE HAS TO FEND OFF SENATE
- ANAKIN HUNTS DOWN & DESTROYS JEDI
- PADME DIES
- YODA ESCAPES TO DAGOBA
- BAIL ORGANA GETS RAISED LEIA
- SWEN RAISES LUKE
- SITH & JEDI FIGHT INTO MYTH
- DEATH STAR STARTS CONSTRUCTION
- ANAKIN & OBI WAN DUEL
- CORUSCANT'S NOT ATTACKED
- CERO GETS GOT PLANTED
- ANAKIN GETS WOUNDS & CHERGES INTO POWER
- CLONE WARS
- DEATH STAR PLANS EXIST - SPACE (JEDI) PLANS



- 4.1 Anakin Skywalker (Hayden Christensen) makes the decision to turn to the dark side and becomes the Sith Lord Darth Vader.
- 4.2 Poster for Revenge of the Sith designed by Drew Struzan. It was released on March 5, 2005.
- 4.3-4.4 Erik Tiemens's thumbnails showing concepts for Act I, which was initially going to show seven battles of the Clone Wars on seven planets: Polis Mazta; Felucia; Crystal World; Sinkhole World; Bridge World; Kashyyyk; and Coruscant. Palpatine is rescued above Coruscant at the end of Act I and Anakin turns to the dark side. Other exploratory notes consider the babies, Luke and Leia, being born and in potential danger, Han Solo with Chewbacca on Kashyyyk, and Yoda being healed by the Jedi.
- 4.5 George Lucas's list of Episode III planets, with hand-written notes about their inhabitants (October 25, 2002). The planets are categorized into "Major," "Minor," and those not appearing in the movie, with each having different environments for them to be immediately distinguishable.
- 4.7 Before a script was written, Lucas summarized what was known to happen in Episode III considering the events of the previous and following episodes. He then drew concepts based on this list of events.
- 4.8 George Lucas (center), working with the props department, examines the lightsabers to be used in the film. From left: Anakin Skywalker (Ep III)/Luke Skywalker (Eps IV-V), Darth Vader, Obi-Wan Kenobi (Eps I-II), Obi-Wan Kenobi (Eps III-IV), Mace Windu, and Count Dooku.

George Lucas I'm a movie nut and I want to make movies better, more enjoyable, and easier and cheaper to make. It's my nature to want to do the best job I can with the resources that I have available to me. I want to be proud of my work.

I don't think of myself as a pioneer. I've spent a great deal of money on research and development, and tried to push the envelope of the medium, primarily because I want to get the best possible image and the best possible way of telling my stories. I've always found myself bumping up against the celluloid ceiling—the technology that says, "You can't go here, you can't go there, you can't do that." Or the economic resources that say, "You can get there, but it's going to cost you to do it." And my feeling is that the artist needs to be free, not to have to think about how he's going to accomplish something, or if he can afford to accomplish something. He should be able to let his imagination run wild without a lot of constraints. And that's what digital is allowing us to do.

On April 20, 2002, just before Episode II was released, we had a digital conference at Skywalker Ranch with all the people who

had worked in digital cinema: Jim Cameron, Robert Rodriguez, Michael Mann, me, and the Pixar guys. That was it. That was all the people who'd had any experience with it. We invited a bunch of our friends to come, so there were maybe 25 to 30 people there. The five of us who had worked in digital cinema got up and explained what it was all about, what the problems were, what the tricks were, the advantages and disadvantages of what we were doing.

Mike Blanchard/Technical Supervisor Pixar showed how bad release prints are in comparison to digital projection.

We set up a color correction demo showing the precise control of working digitally. We explained how we shot, the workflow for dailies, and how much more efficient everything was. It was a way of saying, "Look guys, there's all this stuff happening. We're doing it right now. And this movie is coming out next month." Then we screened *Attack of the Clones*. Some filmmakers were very skeptical, or not into it at all. We were still doing color correction on Episode II, so the minute the presentation wrapped we tore it all out, took it back to ILM, and got back to work finishing the film.

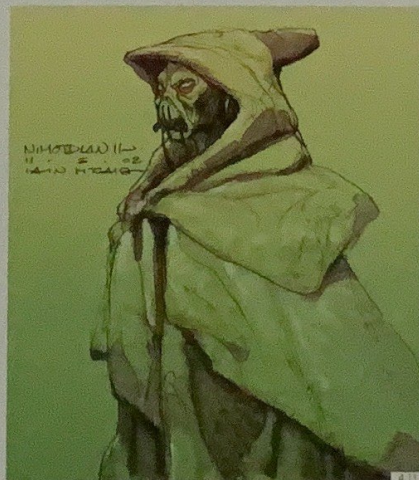




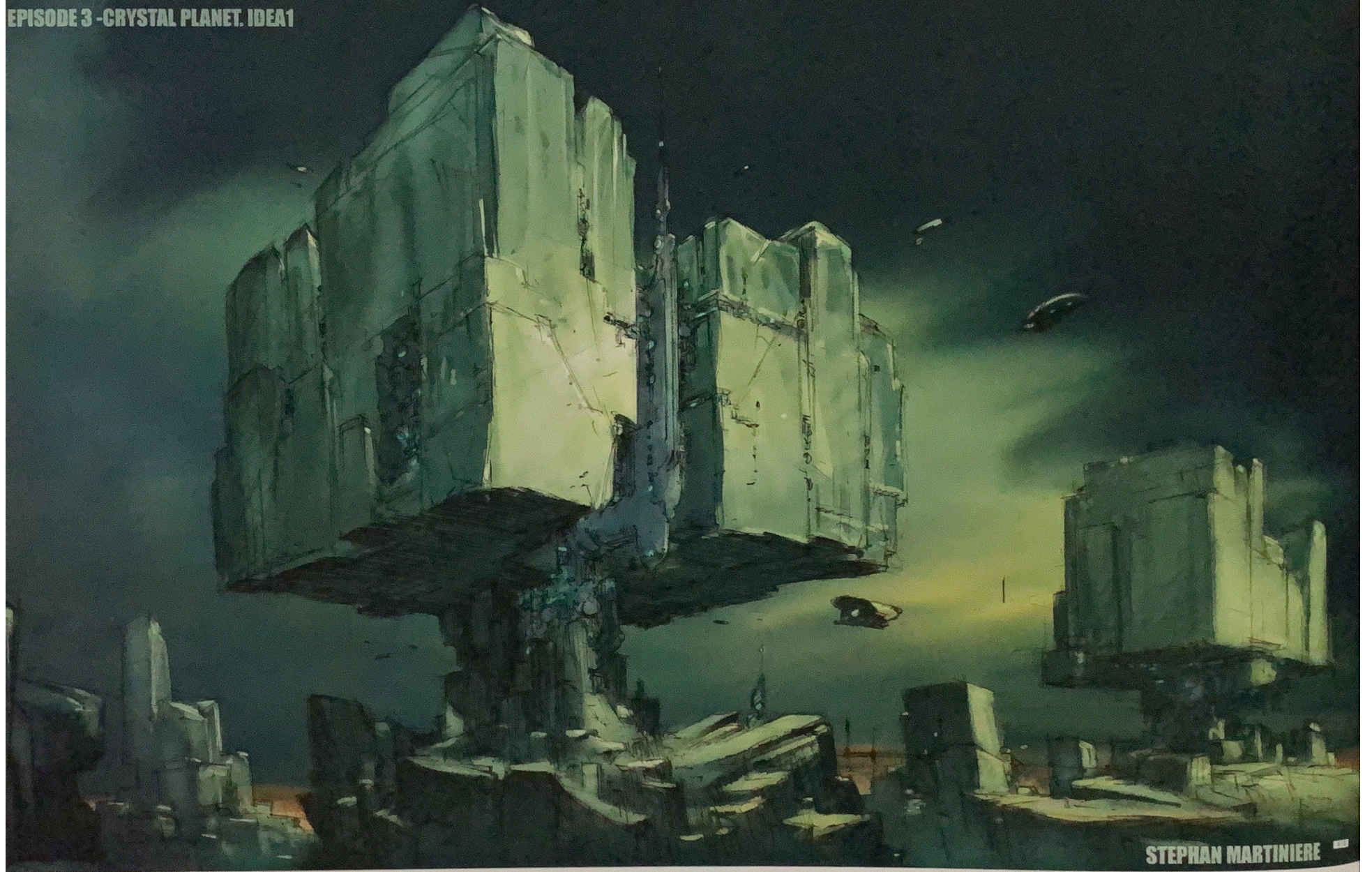
KING PAV
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- 4.9 Ryan Church's concept for a ring world, a gas planet entirely surrounded by a constructed city (September 26, 2002). Originally, this planet was to be called Cato Neimoidia, and the Trade Federation Battleships of the Neimoidians can be seen flying around the structure.
- 4.10 An early version of the ring world by Church shows the planet as uninhabitable but a potential source of energy for the surrounding ring city (June 1, 2002).
- 4.11 Iain McCaig's concept for a Neimoidian, a wealthy citizen of the ring world (November 5, 2002).
- 4.12 An opulent interior on Cato Neimoidia by Church that reflects the wealth of the elite classes (October 24, 2002). The window overlooks the ring city. Cato Neimoidia was not developed further as a ring world but became a bridge world, which was included in the film during the Order 66 montage sequence. It was also mentioned when Obi-Wan denies that Anakin had saved his skin for the tenth time: "Ninth time, that business on Cato Neimoidia doesn't count."



EPISODE 3 - CRYSTAL PLANET. IDEA1



STEPHAN MARTINIERE

"I'm not making these, oddly enough, to be giant, successful blockbusters. I'm making them because I'm telling a story, and I have to tell the story I intended."

George Lucas



- 4.13 *Stephan Martinier's concept for Mygeeto, a crystal planet (June 26, 2002).*
- 4.14 *Sung Jan Lee's concept for a member of the banking clan, residents of Mygeeto (November 22, 2002). The costume is austere, but he is clearly hard at work making money.*
- 4.15 *Ryan Church's concept for Mygeeto showing interlocking hexagonal crystal formations on the planet's surface (June 1, 2002).*

Rick McCallum / Producer The idea was to create a system where you're in a completely digital realm—not only the digital arena where you capture the images, but most importantly in the distribution process—so there is no loss of quality from one print to the next.

George Lucas We were investigating three possible ways to distribute the films: by satellite, via a disk, and over the phone line.

Rick McCallum For an industry that manipulates people emotionally, that is so powerful—that can change people's attitudes so quickly around the world—it is the most conservative, old-fashioned business. The technology has never changed. There isn't a single studio out there that has created any technological achievement: It has all been done by individuals. Here is a business that grosses \$5 to \$6 billion a year in theatrical revenue and another \$15 billion in video rental, and there is nothing put back into the industry at all.

George Lucas From the time you introduce a product to the time it gets accepted in the industry is about 10 years. The work that we did developing SoundDroid and EditDroid in the 1980s was continued by Pro Tools and Avid in the 1990s.

Rick McCallum At that time Avid were a small force in the television business, but couldn't make an impact at all in feature films. The arguments the editors made were always the same: "I need to smell it, to touch a film before I can cut it." Today, there are probably less than five out of 2,400 editors that are cutting movies on film. That is exactly what is going to happen with digital cinematography, and digital projection, and digital distribution.

Very few people understand this, but the six major studios spend between \$1.2 to \$1.3 billion a year in distribution costs, and yet there is nothing in place anywhere that insures any quality whatsoever.

You could reduce that by about \$1 billion per year if you could digitally distribute a perfect copy of your film to every cinema, where it could be reproduced exactly the way it was made. It doesn't take much thinking to realize this is the way it has to happen. Yet the infrastructure is so locked in, it will take years to accomplish digital distribution.

We'll never have a huge number of digital screens until the corporate owners of the studios and the theater circuits realize that they have to get their act together. If they don't, they're going to lose their shirt because the average moviegoer can get a better experience at home with DVD than in most theaters. Nothing is as heartbreaking as going into a regular film theater and seeing your movie, even two or three days after release, with almost no relation to what you delivered. There's no possibility of



"George looked through all the lemurs and said there should be more species, just like there is on Earth. So I did space lemurs, warrior lemurs, and so on."

Sang Jun Lee / Concept Artist



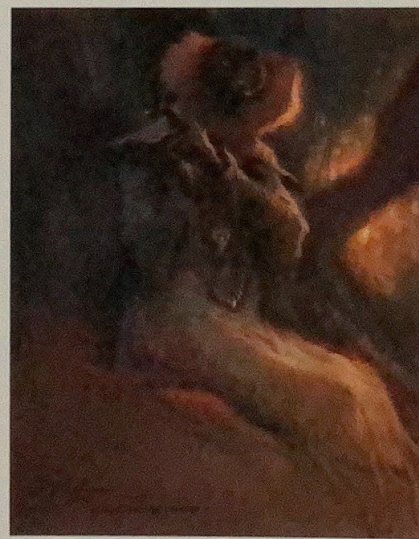
4.16

quality control with the 19th-century technology in most theaters. There are more than 5,000 theaters out there, with more than 36,000 screens, and maybe 80 are equipped for digital.

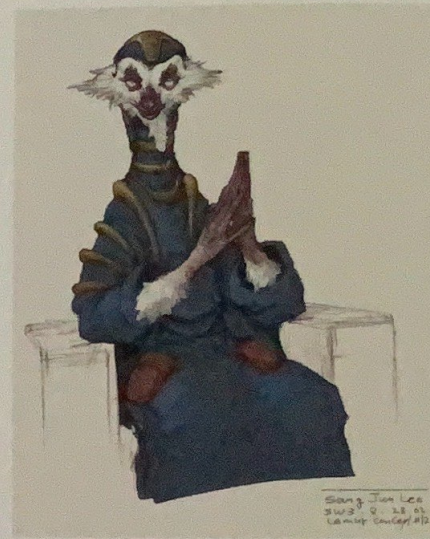
The Creative Flow

Ryan Church / Concept Design Supervisor In April 2002, about a month before Episode II opened, George casually says to us, "I want you to start thinking about seven planets—seven new planets that are completely different from each other—this is where the Clone Wars are happening. I want you to think about that." Well, this is something I've been thinking about since 1977, when I was a kid, so I said to George, "Oh, I think I've got some planets for you."

George Lucas The first 10 minutes are going to be a huge spectacle. You're not going to know what is going on other than it's the Clone Wars. Now is the time to go way out there to be as wild as possible!

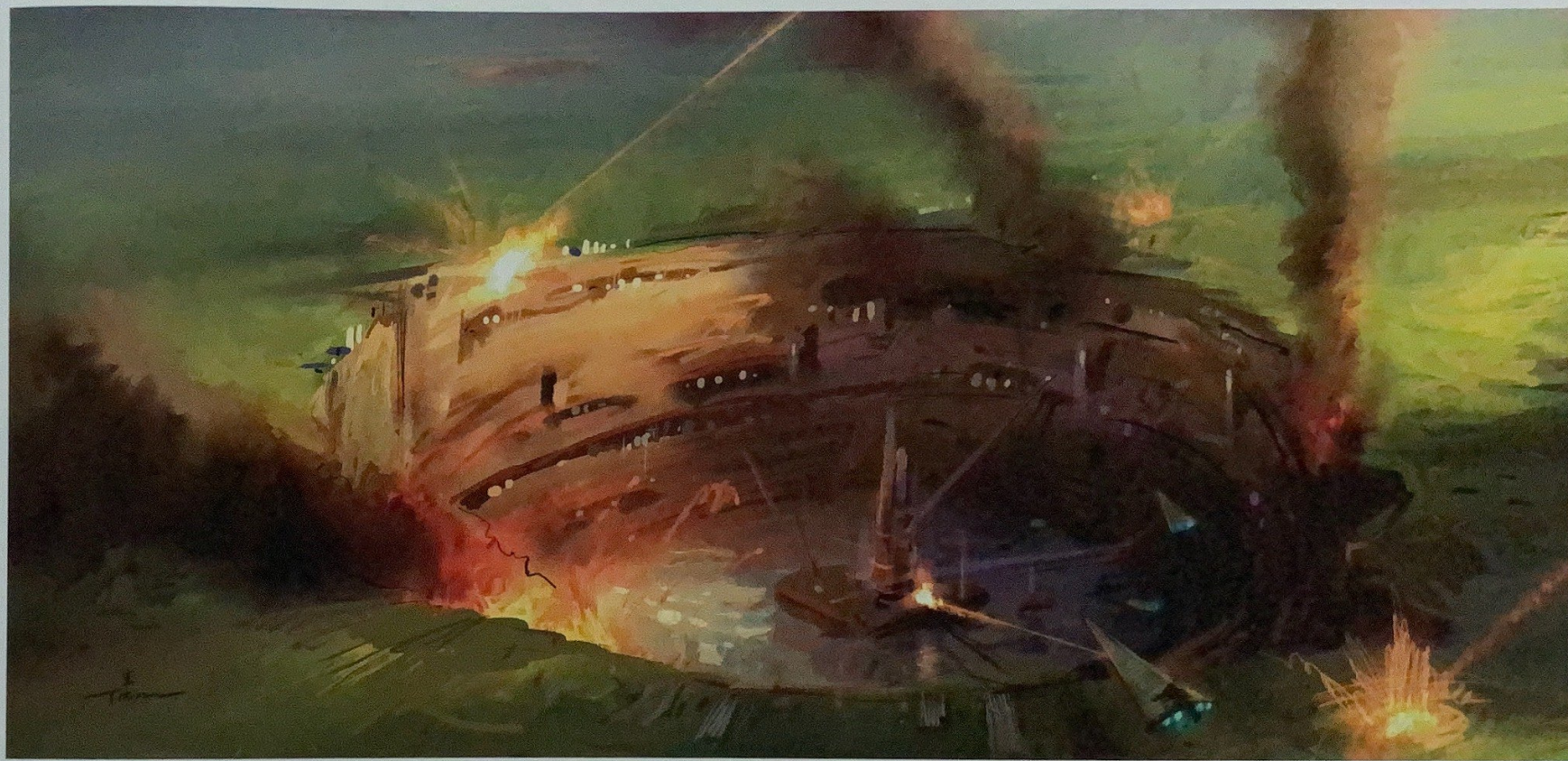


4.17



4.18

- 4.16 Derek Thompson's concept for "space lemurs" (November 14, 2002). The original idea was that they were residents of the sinkhole world, Utapau. They were replaced, and then became citizens of Mygeeto, but were later not used in the film.
- 4.17 Erik Tiemens's concept for the lemurs with exotic costuming (July 10, 2002). Tiemens: "George was driving through San Francisco and he saw a billboard with lemurs and thought, 'Oh, that would be interesting,' so it was fun to free-associate and explore that. I looked at Art Nouveau artists like Alphonse Mucha and then played with it."
- 4.18 Sang Jun Lee's lemur concept with plain costuming (August 23, 2002). All the artists were given the opportunity to develop their visions for creatures based around ideas that were discussed with Lucas during the design meetings.
- 4.19 Tiemens's concept for a battle raging on a sinkhole planet, later named Utapau (June 20, 2002). Tiemens: "George shared kernels of ideas that were not developed." For Return of the Jedi (1983) Nilo Rodis-Jamero, Joe Johnston, and Ralph McQuarrie had drawn concepts for a crevassed planet, and then Doug Chiang developed that further in unused designs for Max Epsa in The Phantom Menace (1999).
- 4.20-21 Tiemens's art depicts a Clone Wars battle (July 19, 2002). Multiple clones inside the sinkhole defend themselves from attack from the skies. Tiemens: "I would show these initial sketches to George, who would give me verbal feedback, and maybe one idea from them would be used for Utapau, and another for another planet."



4.19



4.20



4.21





4.22

"It's not in the script anymore, but we were told that Han Solo was on Kashyyyk and that he was being raised by Chewbacca. Han's such a persnickety guy later on—he always has to have the best of everything—so I thought it'd be great if when he was a kid, he was an absolute slob."

Iain McCaig / Concept Artist

4.22 An early concept for a lagoon planet designed by Erik Tiemens (June 20, 2002). This would evolve into Kashyyyk.

4.23 Iain McCaig's concept shows a "family portrait" including Chewbacca and a young Han Solo (December 6, 2002). Initially, Lucas had devised a story outline where orphan Han Solo had befriended Chewie and they were living on Kashyyyk—Han finds part of a transmitter droid and this helps Yoda track General Grievous to Utapau. Han Solo was later eliminated from the script.



4.23

"I found I was forcing change on a world that didn't want to be changed."

George Lucas



424 Erik Tiemens's concept for the forested planet of Koshyyyk, home of the Wookiees, with karst-like limestone topography in the background (November 12, 2003). It clearly shows the template for the Wookiee tree that was used in the film.

425 Sang Jun Lee's concept for an athletic Wookiee warrior (November 15, 2002). He wears armor and carries a weapon as he swings from the tree.

426 After the individual elements for Koshyyyk had been designed and approved, they were assembled into shots for the movie. This is Ryan Church's concept for shot KHA 30 (May 27, 2004). This not only depicts the forest environment, but also practical elements of the Wookiee habitation such as landing and observation platforms. The infrastructure uses natural materials, integrating with the planet's environment. In this image clones have arrived to help defend the Wookiees' planet.

Erik Tiemens / Concept Design Supervisor I would like to underscore the sense of freedom we had to come up with ideas. George was giving us brand new ideas, we weren't doing a variation on an old theme, but new planets, new buildings, and that was neat.

George would give us a note like, "I want a new planet. Maybe there's ice on it." I would do inspirational thumbnails to see if there was something there worth exploring. That became a crystallized iceberg planet. Then I would start painting over them to get a preview of the palette, and then line them up with the other planets and sequences to make sure they were distinct, and to see an overall mood board for the film. George said he'd like to do something more with crystals, and that became the crystal world Mygeeto.

Ryan and I did a bunch of paintings very quickly. It was a mix and match. I did a lot of early explorations on Utapau, the sinkhole environment, the battles there, and even the lagoon at the bottom of the hole.

Iain McCaig / Concept Artist George made it clear that we had to make each of the environments different from the worlds we'd seen before, and he's done a lot of planets. We would put ideas up on the board and he'd say, "That's like Geonosis," or "We saw that on Cloud City." We were trying to find a look for the sinkhole planet, which is a natural rock formation like Geonosis, and had big circular shapes like Cloud City. Finally, what helped was when he told us, "These people are not from this planet. They're intergalactic travelers and have all kinds of high-tech stuff. They're like the Spacing Guild from *Dune*." That was the moment we knew that we could go inside the rock itself to carve out an entire other city. The insect-like landing platforms are from one architectural period in the history of Utapau, and we can go inside and show that it's been here for thousands of years with buildings in different styles. So that's how the city of Utapau evolved.

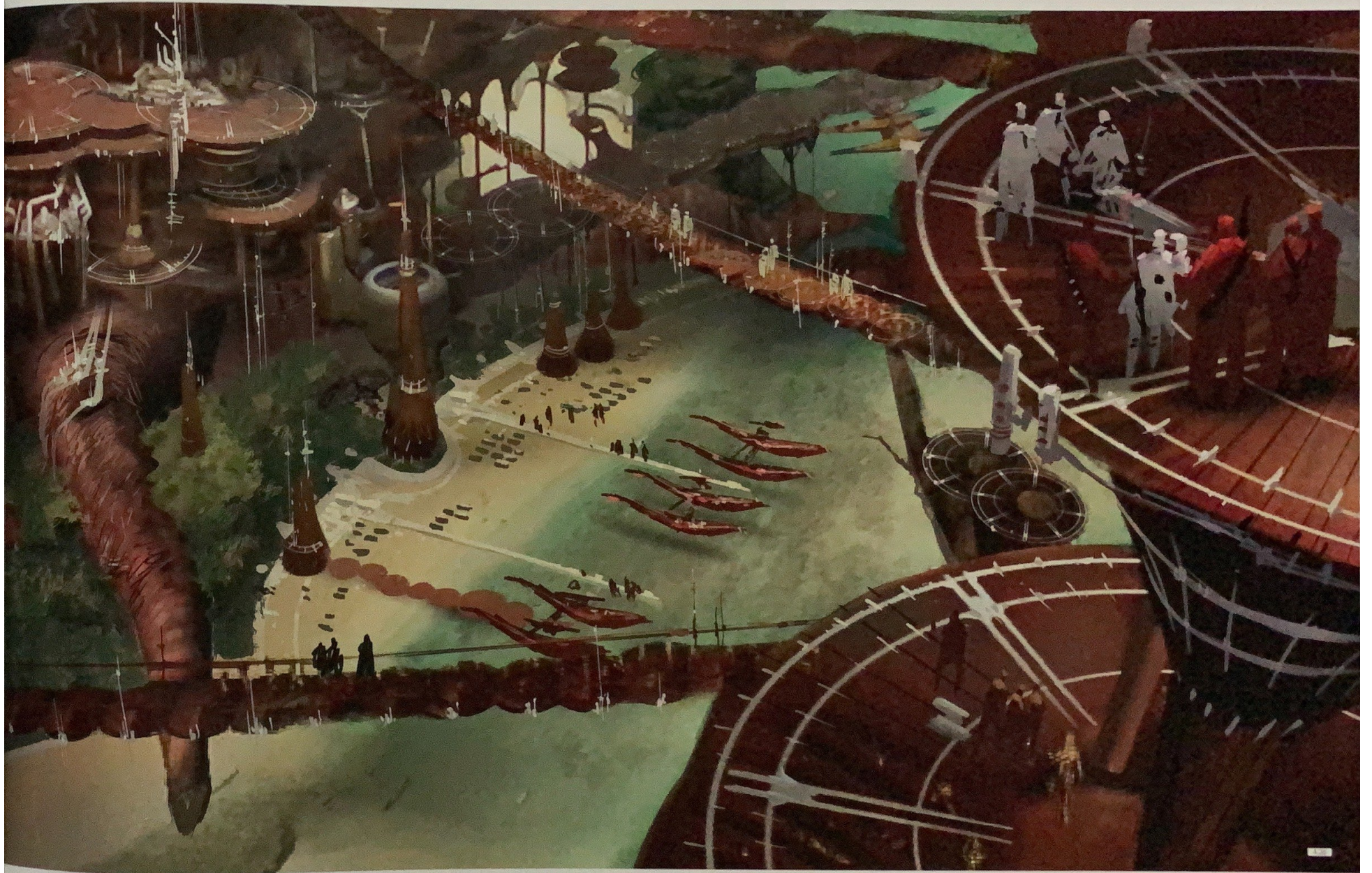
Paul Duncan In most of these concepts there are no characters.

Erik Tiemens This is because we don't always have the story, or know which characters are in the scene, or what they are doing, and if we put somebody in the image it could throw the whole painting off. So, most of these that Ryan and I were doing were environmental pieces to get a feel for the place, and then later on, after the animatics were made, we could get more specific.

Also, George is always looking for things that he might want to collage or regroup or flip or turn upside down, so that's why he has a broad approach. A lot of these ideas were also warming up to the subject matter.

Iain McCaig The biggest thrill and also the biggest hardship was that there was no script—on Episode II the script didn't come in until I'd finished the last of the costume designs. George said, "If you're clever, you can guess what's going to happen because there's the whole six-film saga with a little puzzle piece missing." So this time my biggest personal fun was guessing the puzzle pieces. I sat down with cards, and tried to write the whole thing as if it was a script I was working on. It was neat to draw a character, a scene, a costume







design from one of the cards. I would stick it on the board and when George would stamp it, I was like, "Oh! I found that part."

Ryan Church We had a design meeting with George every Friday afternoon.

Erik Tiemens Our meetings were fairly short.

George Lucas I would tell them about a scene, an animal, or a character and they would do a bunch of designs. I would okay some, or modify them, and we build; then we go to the next thing. So every week, they get more to design. Some of these guys are designing costumes, some are designing sets, some are designing props or cars, and I'm writing the script.

Ryan Church After the meeting I'd drive down to LA, where I taught a class at ArtCenter College of Design. I would sit in the car in a Red Bull-infused fugue state, thinking about what George had said about my artwork, and the new designs he wanted, and images would come to mind.

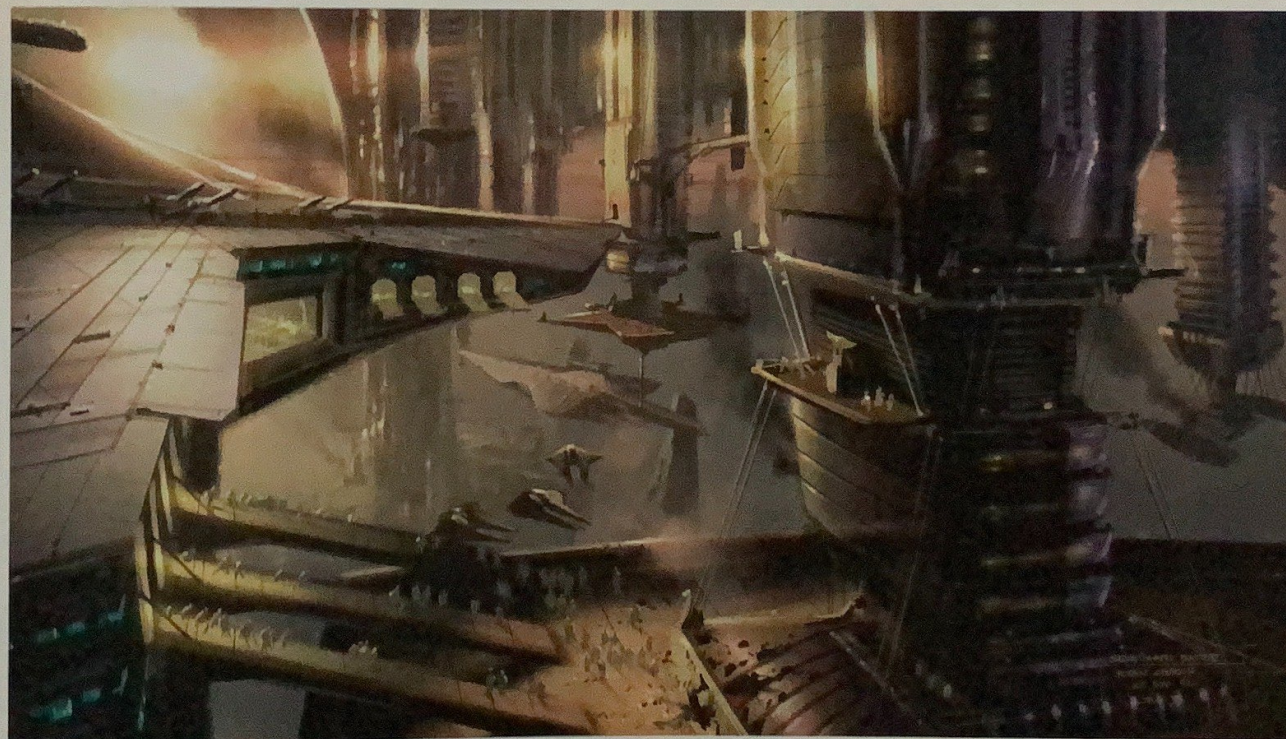
Derek Thompson / Concept Artist On most projects, you're working from something very locked in, but we're in a situation where we're designing and working within very loose parameters. It's unique because we can thrust all of this enthusiasm and energy that we have for our respective fields of interest, and throw it out there. It may not always go well, but sometimes it will. On this show in particular it's all the things we all love.

Erik Tiemens We're always talking about things we loved as kids — toys, movies, experiences — and it never stops. Each day it's "Hey, I can pull that out of my experience bag," and bring it to the artwork.

- 4.27 Ryan Church concept art shows a battle charge on a bridge world, where buildings hang underneath the bridge (December 2, 2003). The foreground battle clearly depicts the contrast between the forces of light and dark. The creature carrying the Jedi leading the clones into battle bears a resemblance to the lizard on Utapau.
- 4.28 Church's concept for a space battle on the bridge world (August 27, 2002). Starfighters launch from the Star Destroyer's flight deck in the foreground while the battle rages against the enemy starships in the background. The bridge world was named Cato Neimoidia for the film.
- 4.29 Church's concept for a rescue from Cato Neimoidia (August 29, 2002). A Jedi flies in on an ARC-170 clone starfighter to pick up a computer who has been engaged in battle; droid debris is strewn across the surface of the bridge.
- 4.30 A Star Destroyer docks and deploys clone troopers on Cato Neimoidia in Church's concept art (November 22, 2002).



4.27



4.30

We had an amazing researcher who helped us, David Craig. He was very eclectic. He'd bring in shells, or an old cow bone. "Look at this and see the marrow and how they dry out." I would zoom into that and get ideas. One time he brought in plastic sandwich trays and said, "Take a paper towel, get it wet, and rub the carpet." We'd put them in the sandwich trays, leave them in the closet for a week or two, pull them out, and this amazing fuzz was growing out of it. He was encouraging us to literally play with mud and blocks and tangible materials, to encourage the creative flow, because it's very easy to go stale.

George would sometimes reference an image from the research library downstairs, and part of my process was to go down there and bring up tons of books. I would have those open all around my desk. I'd tag images, and I'd let all of that reference and inspiration stew for a week or two, and as I was developing the sketches, they would get more informed and synthesized. After that I felt more comfortable in conversations with George, and then he would say something unexpected and I would pursue that avenue a little bit. He would guide me in the direction that was worth pursuing.

I'd do a pencil drawing or an ink drawing, or a little gouache painting, or watercolor, scan that in, and then work on top of that using Painter software along with Photoshop.

Like a writer, an artist is exploring, fleshing things out, and the craft somehow creates more and more focus, and then you get a flow. You don't want to be constantly interrupted with meetings that maybe aren't essential. That's where Rick and George were so good—they wanted us to keep creating and not get bogged down with too many practical, logistical things. We could focus on our design and the art-making process.

Ryan Church I had gotten fast at doing these paintings in Painter. I was doing everything with my hand, but I had undo and watercolor and wash and oils all in one package. It was the best of both worlds, and I feel very fortunate to be trained completely traditionally and work digitally.

"The films follow the rules and regulations that I grew up with. They are about mythology, and show the way you should act, and the mores you should carry with you."

George Lucas



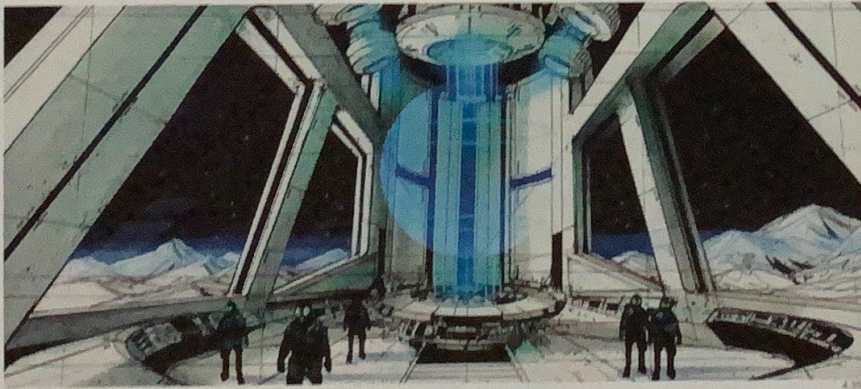
- 4.31 Ryan Church's spiky concepts for a thorn world (October 24, 2002). Elements from this design would evolve into Felucia.
- 4.32 The designers went into a great level of detail for each planet concept, not only considering its environment but also the flora and fauna. Sang Jun Lee's concept for a Felucia creature that bear a resemblance to jellyfish (December 6, 2002). A clone is shown for scale. The concept is that the creatures can absorb and digest organic matter—the armor and weapons of the victim are discarded.
- 4.33 In Church's art for the seaweed/coral environment of Felucia where the concept was that it was an underwater planet without water (July 6, 2004). Note the scale of the vehicles and creatures in the foreground, which are tiny compared with the flora and fauna.







4.35



4.36



4.37

"Working with George is a scary but exhilarating experience. He comes up here and asks, 'Is it a good read?' He keeps it pure and honest. He makes sure that design is in service of the storytelling."

T.J. Frame / Concept Artist



4.37



4.38

- 4.34 T.J. Frame's artwork for Polis Massa, a city inside an asteroid (December 3, 2002).
- 4.35-36 Feng Zhu's concepts for Polis Massa's interiors show a control center and corridors (November 20 and December 5, 2002). Zhu: "We didn't know what Polis Massa was for, so I thought it might be where they're building the Death Star."
- 4.37 Ryan Church's concept for Polis Massa (November 6, 2002). Early names for the asteroid/moon were variously spelled "Polis Matza" and "Polis Mazta."
- 4.38 Stan Dahlstedt's concept for a Polis Mazta (January 23, 2003). It draws upon Doug Chiang's unused "no-face" design for a Kaminoan in Episode II. A puny creature relies upon a sizable spacesuit to survive on the asteroid's surface.
- 4.39 Warren Fu's concept for a space trooper on "Polis Mazta" (November 22, 2002).



4.39

SPACE TROOPER (POLIS MAZTA)
R.FU 11/22/02
SWJ



4.41

Erik Tiemens Once we had finished, we would hand over our artwork to art department supervisor Fay David. She would name and number them correctly, then after George gave his approval, she'd distribute them to editorial, animatics, production, and ILM.

Ryan Church George was very receptive to our ideas. "That's not going in my movie but that's fun." "No, no, I would never do something like that, but that's cool." If you do a trashy, dirty, *Blade Runner*-esque dystopian planet that's moody and fun to draw, he's like, "Come on. We don't do that." But he never stopped us from trying—he always wanted to see what we had in our head.

Warren Fu/Concept Artist A lot of *Star Wars* design is about impact. Everything has to read clearly and instantly, because George is into silhouettes and how to read it right away. "Where's the front of the ship?" "Where's the back of it?" "What direction is it flying?"

Ryan Church He was pushing us to go further. I had bigger ideas in my head and now they're not limited by anything. He is the best boss I ever had. He completely spoiled me.

Iconic

George Lucas Stay away from red, except for Mustafar.

In June 2002, Lucas confirmed that the climactic confrontation between Anakin and Obi-Wan would take place on the red lava planet Mustafar.

Erik Tiemens We saw that Ralph McQuarrie had made sketches of the Mustafar look for *Return of the Jedi*, and Vader's castle in lava for *The Empire Strikes Back*.

Rick McCallum We had a very lucky break in October 2002 when we were conceiving the whole Mustafar sequence. Mount Etna exploded. So I grabbed Ron Fricke, wonderful cameraman, and we rushed off to Italy and within 24 hours we started filming for a week the extraordinary footage that we have on Mustafar of the volcano planet literally exploding in front of our eyes.

4.40 Ryan Church's concept showing Palpatine sending the clone troops into battle (August 4, 2003).

4.41 Lucas encouraged his design team to engage in blue sky thinking as part of the development process. Derek Thompson created a series of drawings mixing planets and alien cultures in different situations, including this one of Jedi Master Ki-Adi-Mundi loading clone troopers and Ithorians into battle.

4.42 Church's concept for a Clone Wars battle depicts clone troopers facing an octapiarra tri-droid in a war-ravaged cathedral-like environment (August 29, 2002).

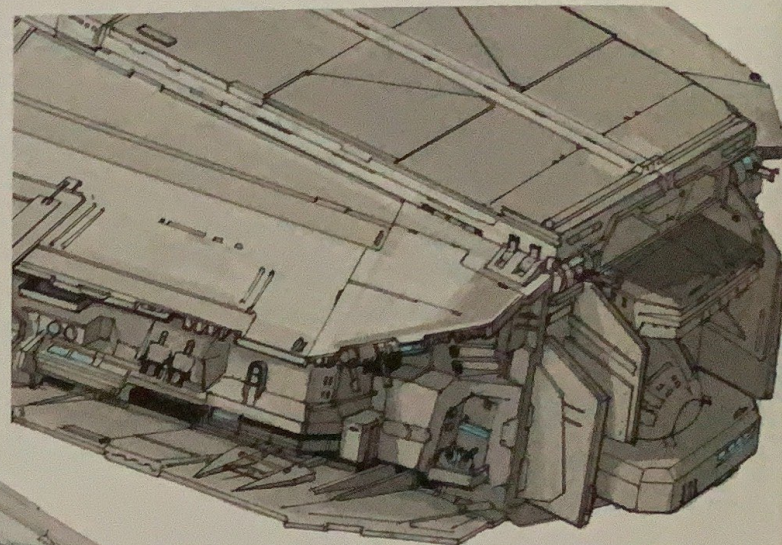
4.43 During the design process the concept artists used digital technology to copy and amend concepts. An image could be easily repainted and retit so that the basic structure of a planet could be given a very different look. For example, Church's concept of Jedi and clone troopers about to do battle on an ash planet was based on the crystal world Mygeeto (August 22, 2002). This look was eventually used in the movie.



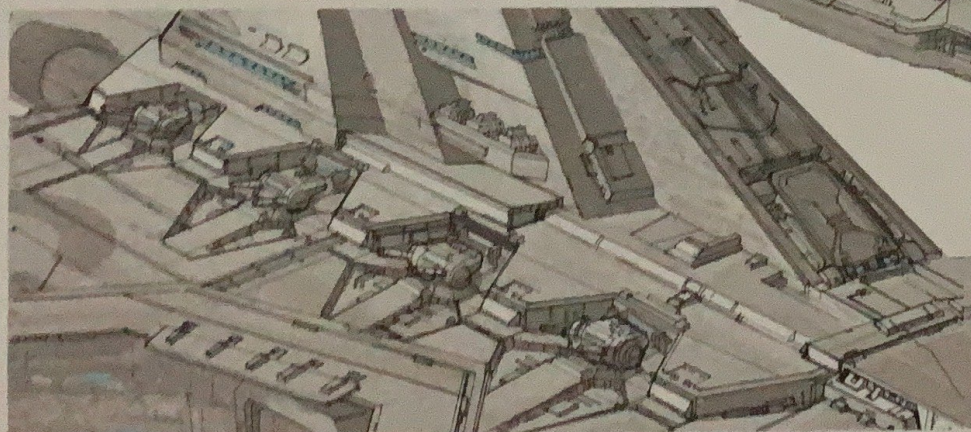
Jedi Cruiser Top Surface Detail

EP3 2/2/04

A. Jander 6.11



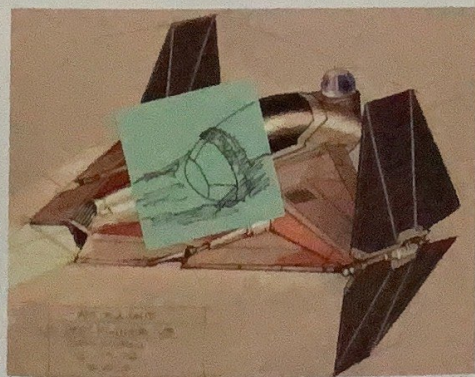
Nose detail



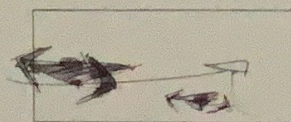
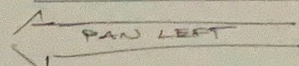
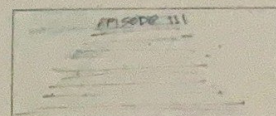
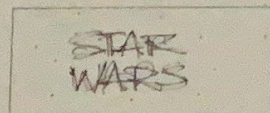
Gun surround detail

"When I did the first Star Wars, I was confident primarily because of my inexperience. Now I'm confident because of my experience."

George Lucas

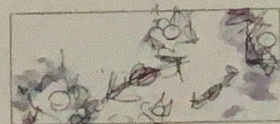


EXT. SPACE



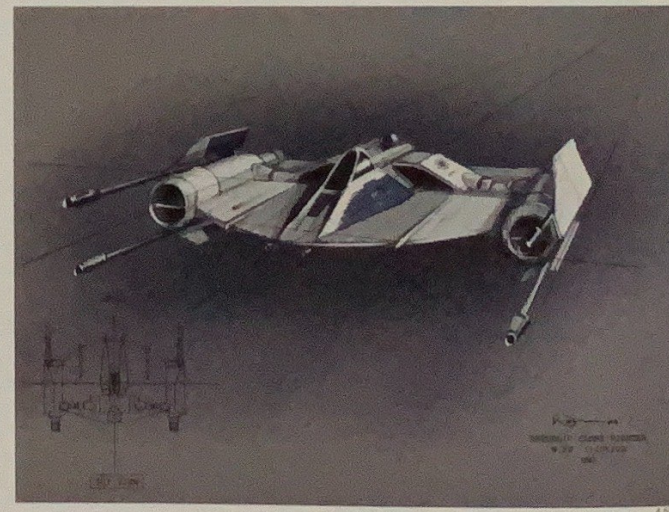
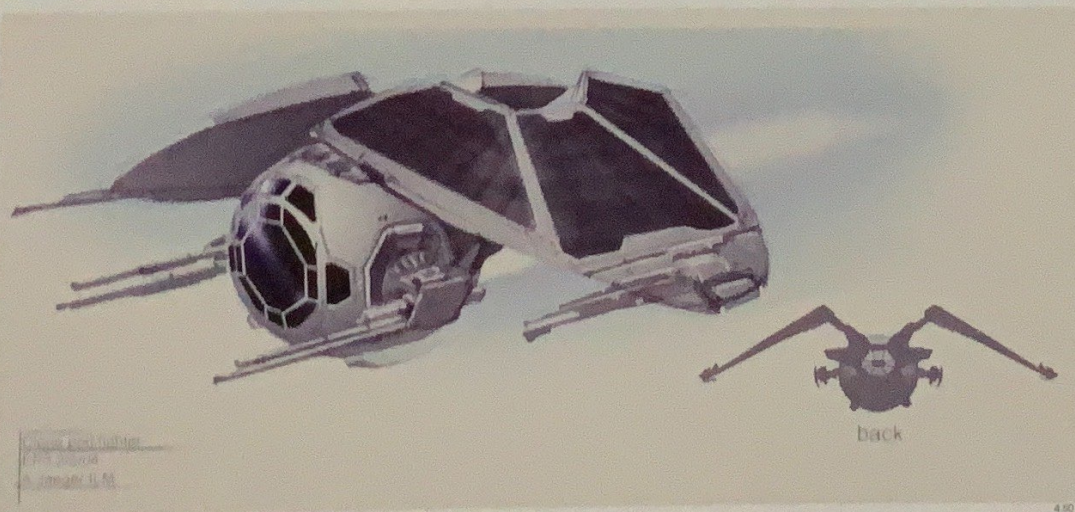
TRUCK WITH FIGHTERS

INT. ANAKIN'S STARFIGHTER COCKPIT



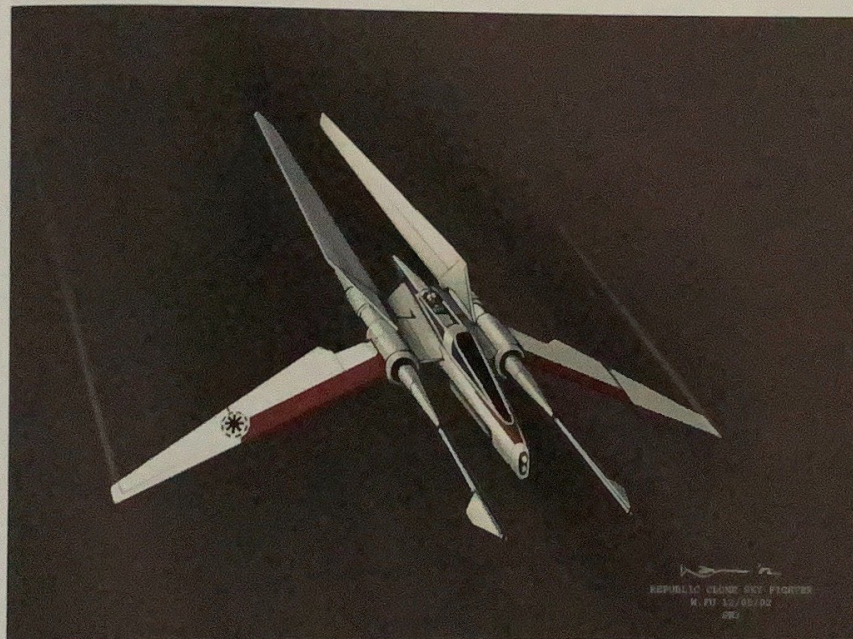
INT. ANAKIN'S STARFIGHTER COCKPIT





"The long, continuous opening shot was a great way to pull the audience into the action before the quick cuts and the frenetic battle. Openings and endings are always difficult challenges."

David Meny / Computer Graphics Supervisor



4.53

- 4.48 In the opening shot of the film two Jedi starfighters, piloted by Anakin and Obi-Wan, skim over the Jedi cruiser. Alex Jaeger added surface detail to the Jedi cruiser (February 2, 2004).
- 4.49 Ryan Church's concept for the Jedi starfighter (June 11, 2002). The droid unit is located on the rear of the ship, behind the cockpit.
- 4.46 George Lucas drew over Church's June 11, 2002, Jedi starfighter concept to make it look more like a TIE fighter, which signals the design evolution from the Republic to the Empire.
- 4.47 Church's modified design for Anakin's Jedi starfighter (March 17, 2003). This has a revised cockpit design with two extended laser cannons, and the R2 unit is now located on the wing, within the pilot's field of vision.
- 4.48 Storyboard, drawn by George Lucas, for the opening sequence for Episode III. It starts with the classic narrative crawl then immediately immerses the viewer in the chaos of the space battle.
- 4.49 Final frame of the opening space battle showing a vast array of ships engaged in intense combat. In the foreground Anakin and Obi-Wan's Jedi starfighters, supported by a squad of

- ARC-170 clone starfighters, head for General Grievous's ship in the background.
- 4.50 Alex Jaeger's concept for a clone pod fighter with wings resembling a TIE fighter's (February 5, 2004). This was developed after principal photography had concluded, demonstrating that even at this stage the designers were still experimenting with concepts.
- 4.51 Warren Fu's concept for a clone starfighter (November 5, 2002). Fu: "We wanted to take the idea of the ring-shaped ship from Episode I and shrink it down to a single-person fighter. The only thing George wanted changed was to take the fins off the side because it looked too much like the Jedi starfighter."
- 4.52 Church's concept for a fighter (January 30, 2004). This design recalls the sleek exterior of the Naboo starships but evolved into a P-38 fighter used by Utopians.
- 4.53 Warren Fu's concept for a Republic clone starfighter (December 5, 2002).
- 4.54 Church's fighter concept would become the ARC-170 clone starfighter (August 1, 2002).



4.52

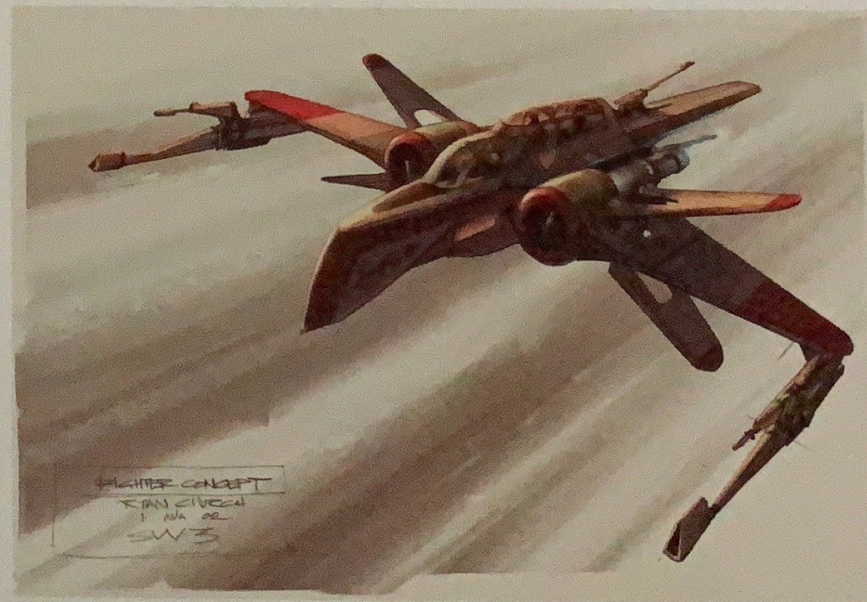
Erik Tiemans I hit Mustafar pretty hard. I spent a lot of time researching, getting books, and watching Ron Fricke's footage. I was intrigued by the theatrics of lava, especially in the evening or at night. It seemed so moody. I painted a sea of lava, which was a photo I shot of the Marin Headlands that I painted over, turning it red.

Ryan Church Seeing how open-minded George was, I wanted to get a breadth of talent. In August, I brought up a bunch of guys I had worked with down in LA. Feng Zhu is a good pen sketch guy. Also, T.J. Frame was an early 3-D guy who could get stuff built in 3-D very quickly, throw stuff to George, and then that went right to animatics.

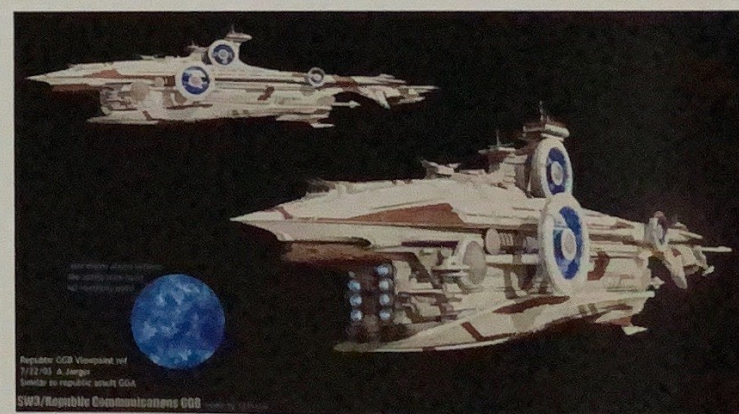
T.J. Frame / Concept Artist I began using 3-D for design work on Episode III in late 2002. This was the first time the art department began incorporating digital 3-D modeling for design work on the series.

I focused on creating fast and rough concepts, beginning with bridge views of the Separatist cruiser from the opening sequence. Depicting a location or prop with drawings and paintings is obviously crucial, but by also creating a rough 3-D version of an asset designers can further resolve issues and hone in on proportions and spatial relationships. A 3-D model can be quickly altered and viewed from any desired angle without having to laboriously redraw the scene by hand.

In the art department we typically used these models as an intermediate stage between a rough sketch or key painting and a finished set design or film asset. Sometimes I made models of existing sketches to ensure the designs worked as intended before sending them to ILM. On many occasions I took sketches from multiple artists of different parts of a set and blended them together to create a cohesive set layout. These layouts were then handed off to the animatics department. ILM's modeling



4.54

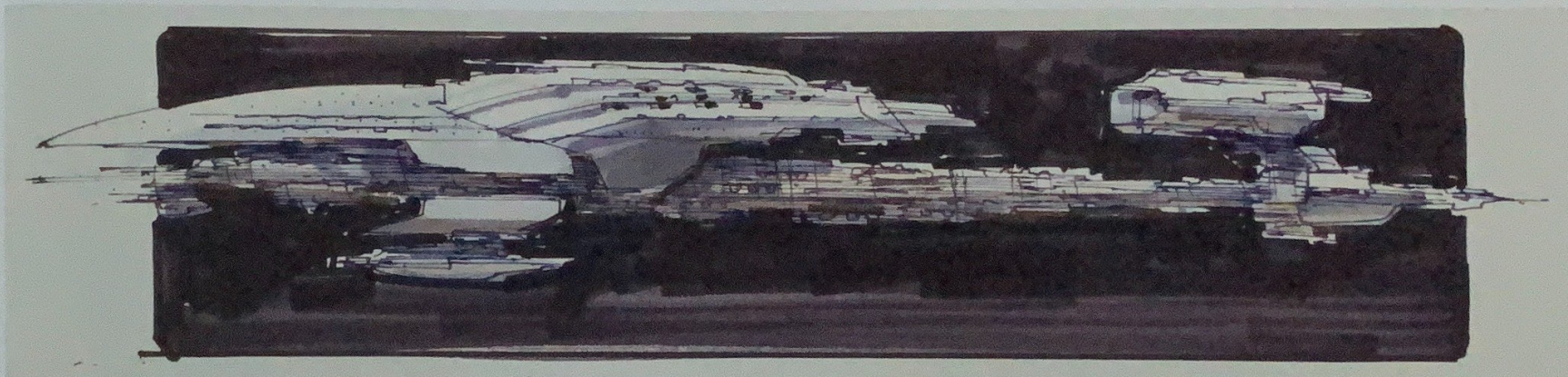


- 4.55 Lucas told Erik Tiemens to turn his original floating gun station concept upside down (July 24, 2002).
- 4.56 Tiemens's concept for a rotor ship (July 23, 2002).
- 4.57 The rotor ship was modeled by L.J. Frame, then Alex Jaeger made this Viewpoint reference (July 22, 2003) but it was not used in the movie.

- 4.58 Joe Johnston's concept for a Rebel cruiser was conceived for Episode VI.
- 4.59 Lucas suggested using Joe Johnston's Rebel cruiser design, and Erik Tiemens's concept became a Separatist destroyer in the battle over Coruscant (June 20, 2002).

“Space battles are my favorite parts of the original trilogy, so I always carve those off for myself. The ones I supervised in the new trilogy were all different. The Episode I battle was a big swarm of fighters all around one big battleship, Episode II was in the asteroid field between two ships and a missile, and III is just total pandemonium.”

John Knoll / Visual Effects Supervisor



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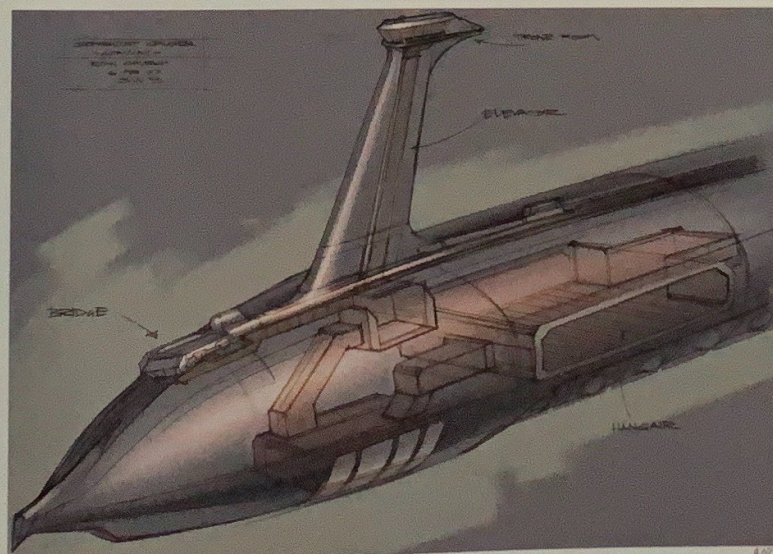


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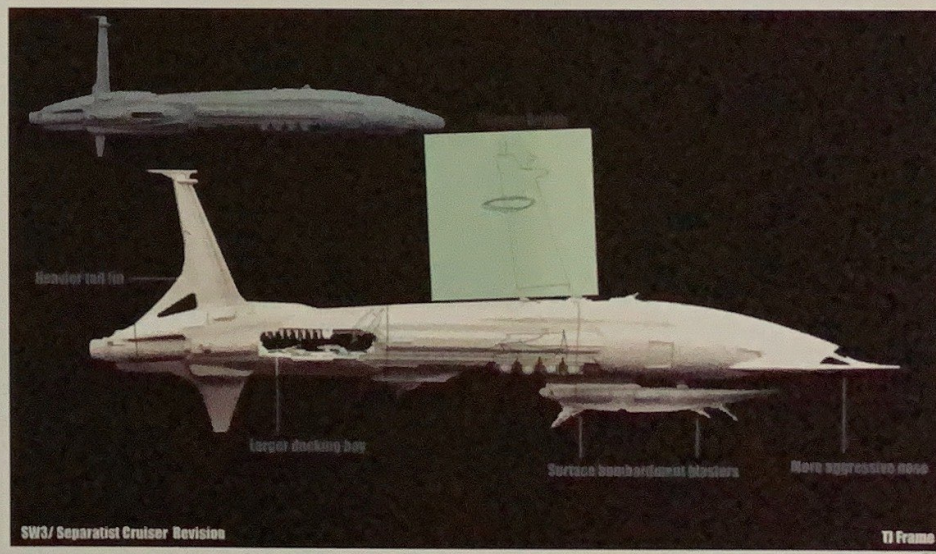




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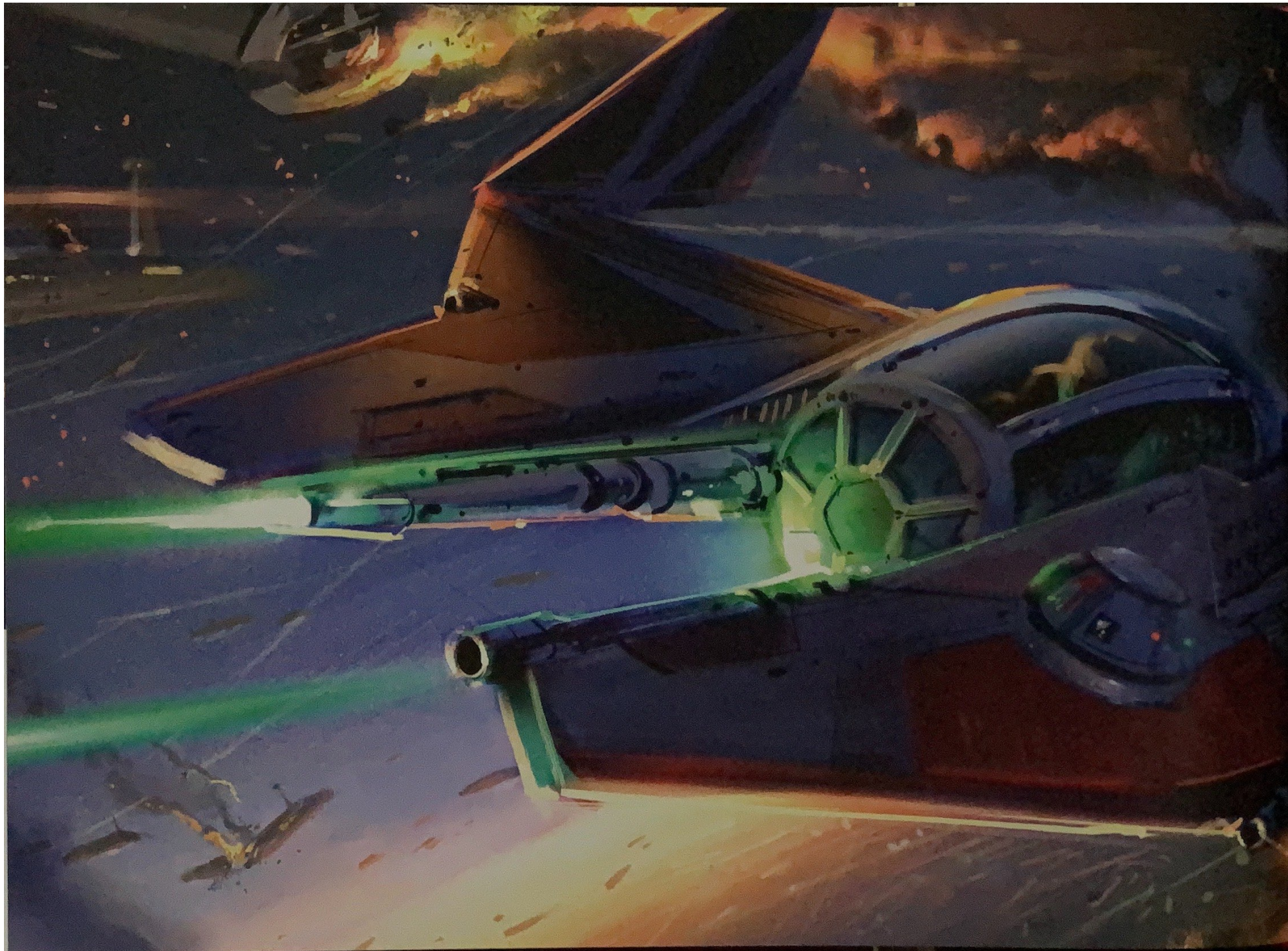
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SW3/ Separatist Cruiser Revision

TJ Frame

4.63

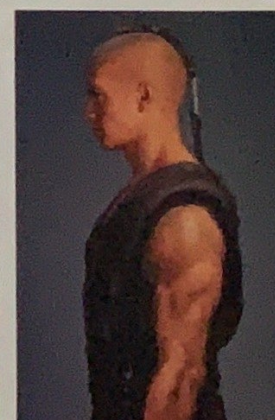
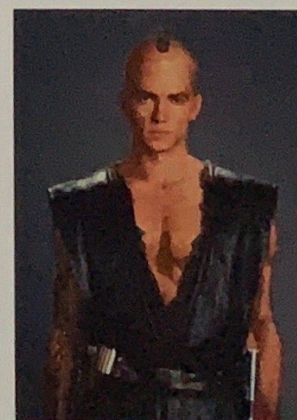




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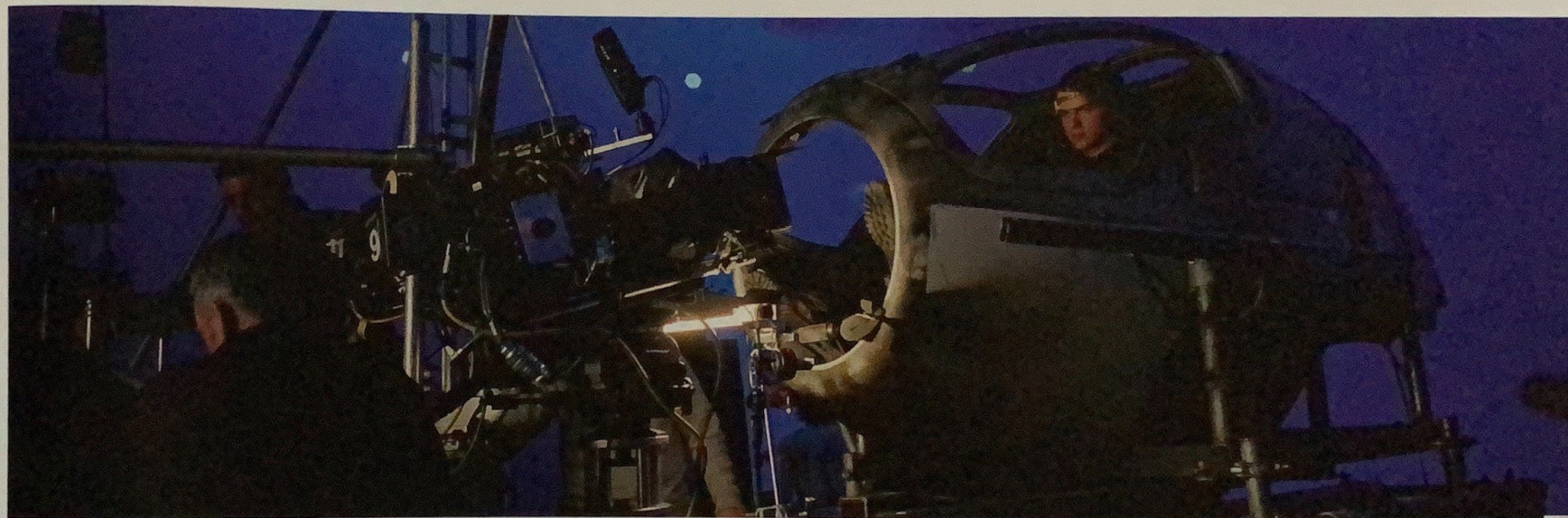


- 4.50 T.J. Frame's concept for the Separatist cruiser (December 20, 2002). It features a hangar and high observation platform at the rear.
- 4.61 Final frame showing the chaos of the battle above Coruscant. The Separatist cruiser, General Grievous's command vessel, is in the background.
- 4.62 Ryan Church's plan of the Separatist cruiser shows the key locations where the action will take place when moved to the front of the ship (February 6, 2003).
- 4.63 George Lucas put a note on T.J. Frame's computer model of the Separatist cruiser to move the tail fin and hangar to the front of the ship (December 20, 2002). Ultimately, they were placed back at the rear.
- 4.64 Church concept art of Anakin's fighter in action (December 6, 2002).
- 4.65 Jaina McNaig's costuming concept for Anakin (November 14, 2002). The cloak foreshadows Anakin's transformation into Darth Vader.
- 4.66 Lucas experiments with potential hairstyles for Hayden Christensen during preproduction.
- 4.67 Anakin emerges from a volcano in McNaig's costume design (October 16, 2002). Lucas commented that Anakin is not scarred before the end of the movie.
- 4.68-69 Jaina McNaig's design for Anakin's hair and costume is toned down but still striking (October 22, 2002).
- 4.70 Filming Anakin inside the Jedi starfighter. A basic cockpit set was constructed for the digital camera to shoot directly inside. The background is blue screen so that the remaining elements of his ship and the background space battle can be added in postproduction.
- 4.71 Final frame of Anakin Skywalker and R2-D2 as they engage in battle.
- 4.72 During the battle we see that Anakin's intentions are virtuous, and that he is prepared to take risks to help rescue comrades who are in danger.



"I've never seen George with anything other than a poker face. If he is concerned about anything he doesn't show it. He's like, 'Well, we'll just keep going and figure it out.' He's got the whole movie in his mind and we've just got little pieces of it."

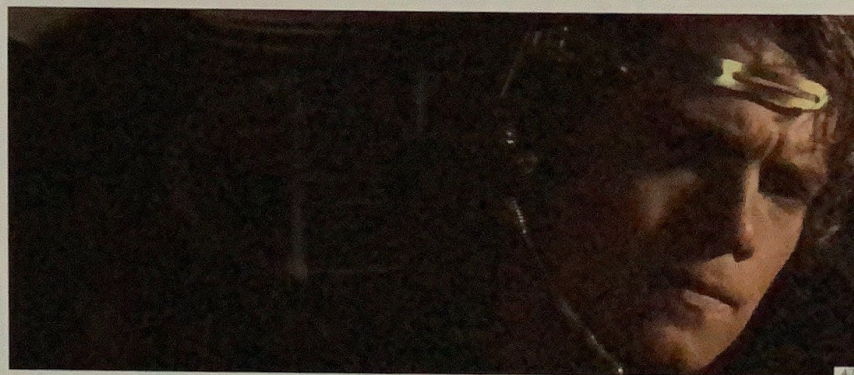
Ryan Church / Concept Design Supervisor



4.70



4.71



4.72

"From Episode I Obi-Wan became this little boy Anakin's mentor and master. He's the disciplinarian, he's always telling Anakin off, and Anakin's always been cheeky to him. There is a father/son element there, which is nice."

Ewan McGregor



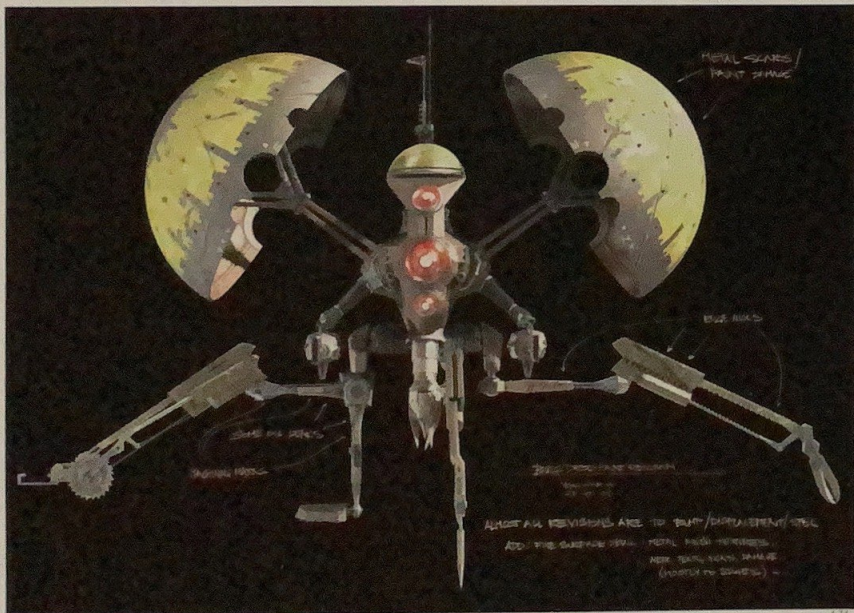
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department, and to the set builders to serve as a reference and a starting point for further refinement.

Because these models were simple and typically untextured, we referred to them as "foam core models" in acknowledgment of the traditional models often built from paper and foam core boards. By keeping the presentation simple and straightforward, it makes it easier to focus on the overall design before materials, colors, and atmospheric effects are added.

Paul Duncan In October 2002, George changed his mind about the film's opening. Rather than begin with the wars on seven planets, and ending with the battle over Coruscant, where Palpatine is rescued by Anakin and Obi-Wan, he cut out the planets and started with the rescue.

Ryan Church I was annoyed about that at the time. The Clone War sequence got cut way down and moved, with each



4.74



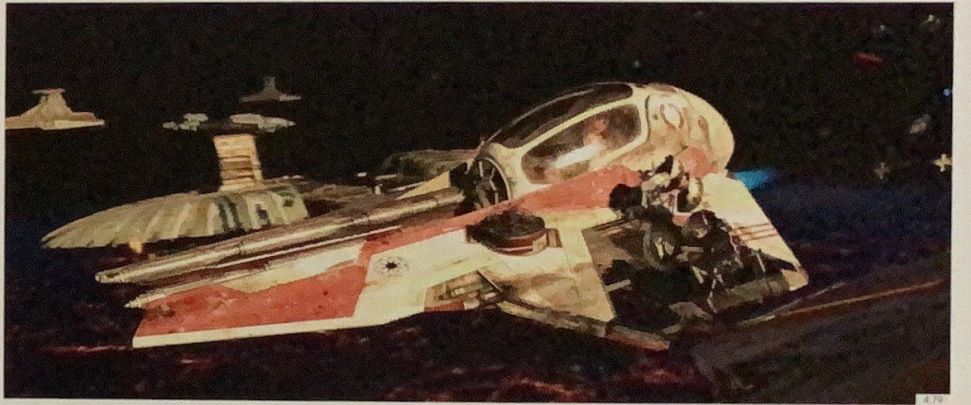
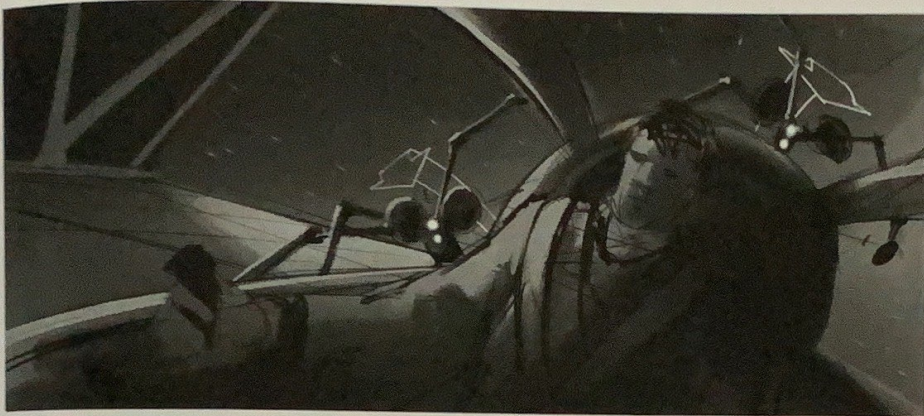
planet getting about four shots in the later Order 66 section, when all the Jedi are killed.

George Lucas I needed a bad guy in the movie. There has to be a bad guy in every *Star Wars* movie and Count Dooku is killed by Anakin early on in Episode III. I wanted something that was reminiscent of Darth Vader but not Darth Vader. I wanted him to be an alien that had been reconstructed into a robot.

On November 8, 2002, Lucas told the art department that the film would include a droid general as the Separatist leader against the Republic.

George Lucas I won't limit it at this point to a droid. It could be an alien of some kind. I'm not sure if I want him to be human. It's got to be iconic. It's got to be evil.

- 4.73 Iain McCaig's costume design for Obi-Wan Kenobi with communications headset (December 3, 2002).
- 4.74 Ryan Church's concept for a buzz droid, which systematically tears apart starfighters and droids with its pincers, saws, and drills (January 23, 2004).
- 4.75 Shooting the pyrotechnic effects as R4 tries and fails to defend itself from the buzz droids.
- 4.76 Church's storyboard for the buzz droids landing on Obi-Wan's starfighter (March 7, 2003).
- 4.77 Final frame of Obi-Wan Kenobi (Ewan McGregor) observing the buzz droid landing on his ship.
- 4.78 Church's storyboard showing the Jedi flying in parallel as Obi-Wan's cockpit glass is being attacked by a buzz droid (February 25, 2003).
- 4.79 The buzz droids have destroyed R4 and are working on the rest of the ship.
- 4.80 Church's storyboard showing Anakin scraping the buzz droids from Obi-Wan's fighter using the tip of his wing in a highly daring maneuver (March 7, 2003).
- 4.81 In this final frame R2-D2 defends himself from a buzz droid attack. Obi-Wan advises that he should hit the center eye.

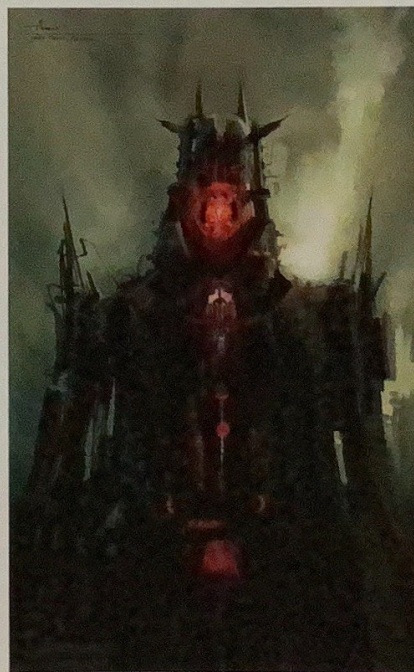




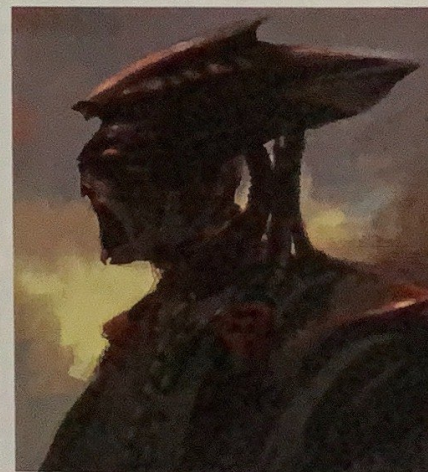
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4.85

4.82 George Lucas encouraged the entire design team to develop and submit ideas for the droid general, the new evil character for the movie, who would eventually be named General Grievous. Lucas liked Warren Fu's initial design and used it for Grievous's bodyguards (November 14, 2002).

4.83 Alex Jaeger's design hovered (November 15, 2002).

4.84-85 Erik Tiemens' designs (November 12, 2002). Tiemens: "I was looking at North American Indian gurus, and maybe I went down a path I wasn't supposed to go, but I think they were worth exploring. There is a furnace or power source inside. I think there might be elements in tone or mood that go through to the final design."



4.86

Derek Thompson We all collaborated on the droid general. It was one of the most exhilarating weeks, because we all got to attack one thing.

Warren Fu I was favoring two droid designs, and then at the last minute, right before the meeting, I had one little sketch I had started but hadn't fleshed out. Darth Vader is black, so I went with pure white—in Chinese culture, white means death. So I finished marking it up, handed it over to art department assistant Ryan Mendoza, and told him, "I don't like it but can you scan it in anyway, and then we'll print it out." Ryan's like, "This is the one that George is going to pick."

George Lucas They came up with lots of different ideas and one, by Warren Fu, stood out immediately. I said, "Ooh, this is good."

Warren Fu I looked at Ryan, and Ryan was like, "Told you so!" I mentioned to George that the general might have organic eyes—George's eyes lit up and he said, "Now that's interesting."

The design was refined over several weeks, so that the general looked markedly different to the original design.

George Lucas We had two designs. I liked both of them, so I said, "Well, this guy will be the general, and these guys will be his special bodyguards, and that way I can use both of the designs." That gives me another fight level, because I needed something that was better than your average droid to fight Obi-Wan. A laser sword can cut through anything and do anything, so I have to figure out some way to have a semi-fair fight, otherwise there's no contest and no drama. So I gave the guards electric staffs that a laser sword can't cut through.

Paul Duncan You named the villain General Grievous in early 2003.

George Lucas He was the antithesis of Vader, which is to say, Vader was mostly human and part robot, whereas this general

4.86-87 Derek Thompson designs of a childlike leader and a cyborg (November 14, 2002).

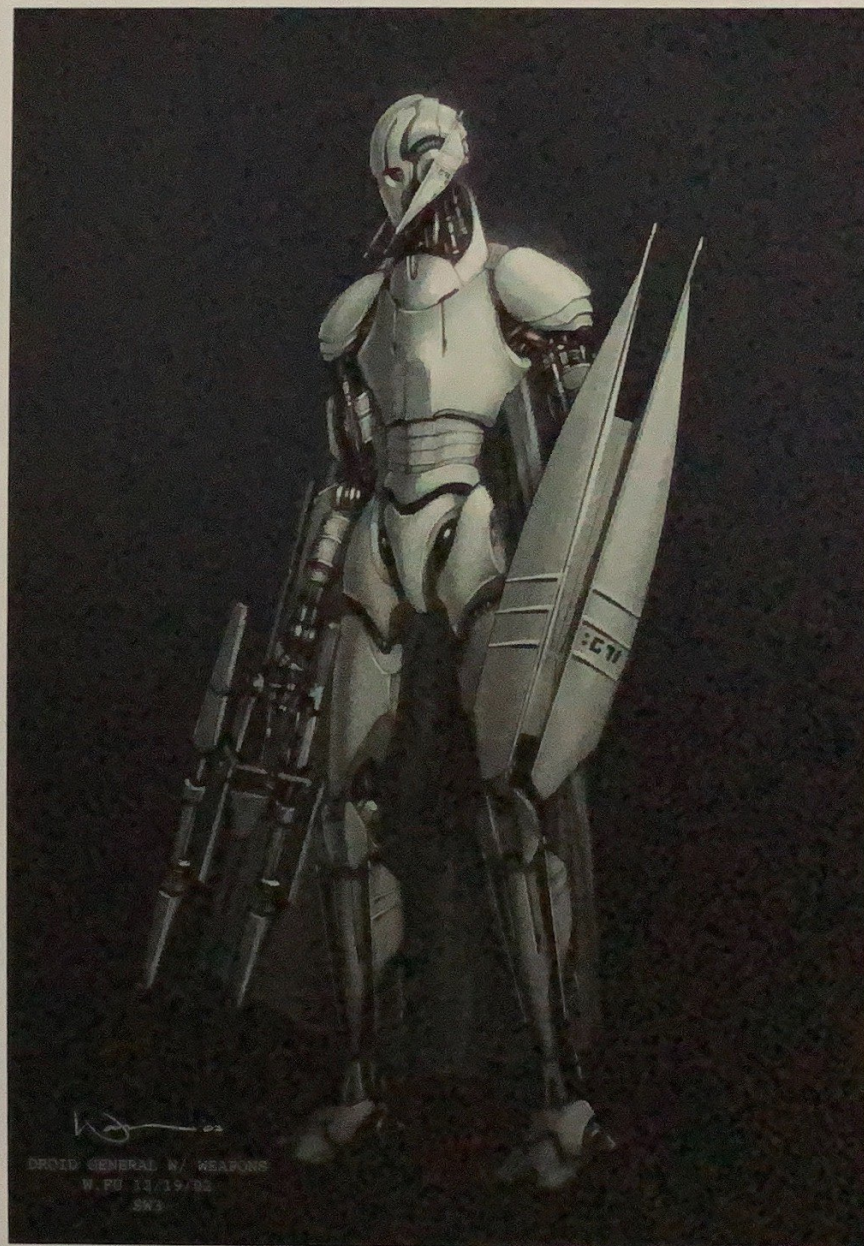
4.88 Warren Fu quickly developed his initial concept for General Grievous and gave him a variety of weapons (December 19, 2002).

4.89 Derek Thompson's design shows details of Grievous's construction, complete with four arms that could wield multiple lightsabers (May 25, 2003). Grievous is a droid on the exterior, but he possesses organic internal organs.

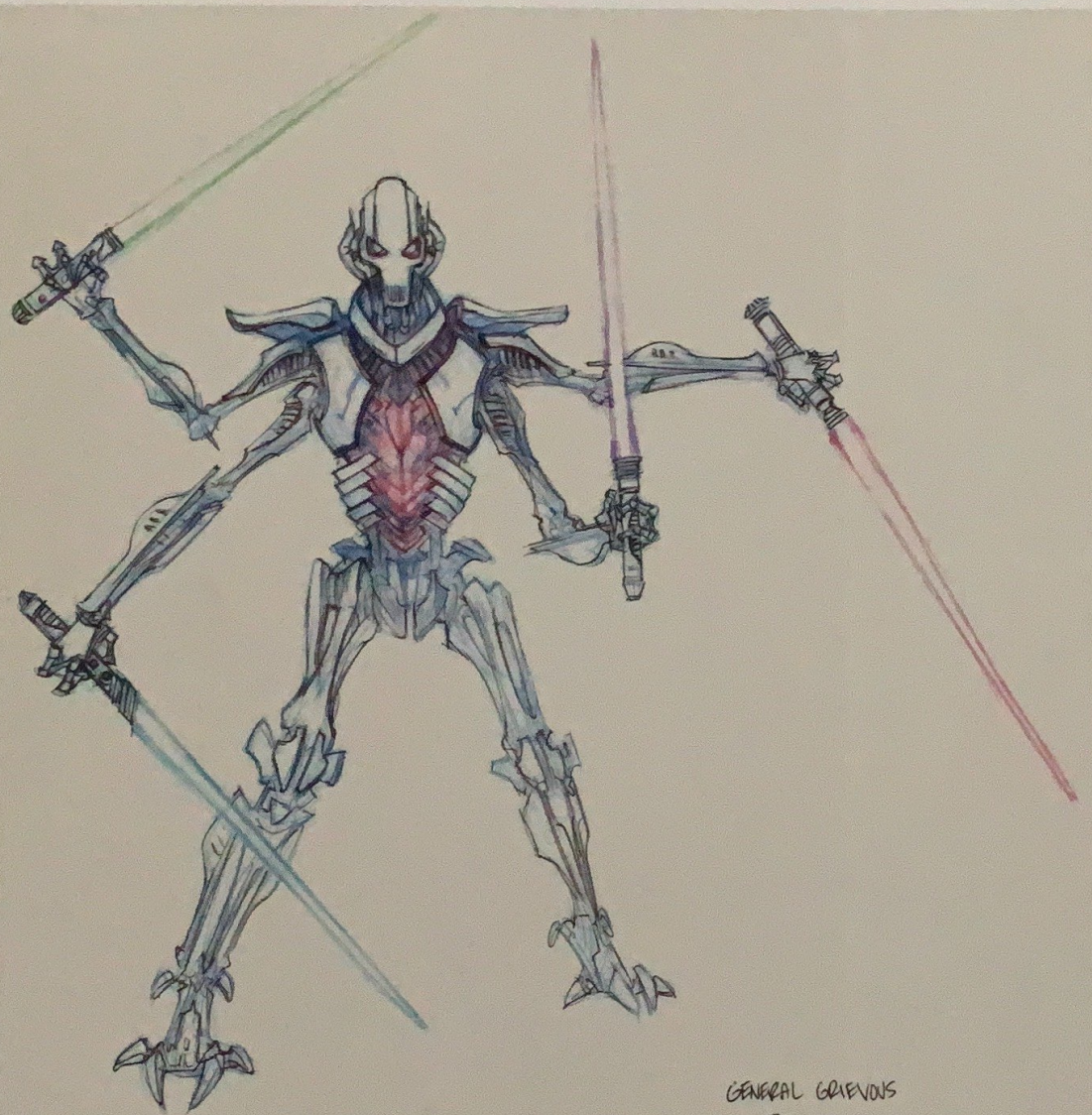
4.90-95 Concept art by Feng Zhu detailing General Grievous's anatomy and movement (June-July, 2003). A great deal of thought was put into determining how he should move, the practicalities of joint articulation and head rotation. The different colors on the images represent specific elements of his construction. General Grievous, an organic-mechanical hybrid with a rasping voice, foreshadows what we know Anakin will become. The design process not only focused on physical design, but also added meaning to the characters.



4.87

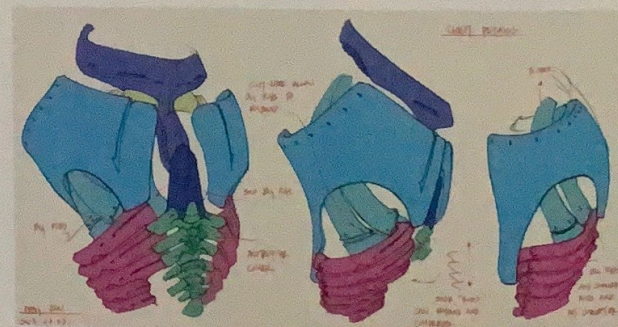
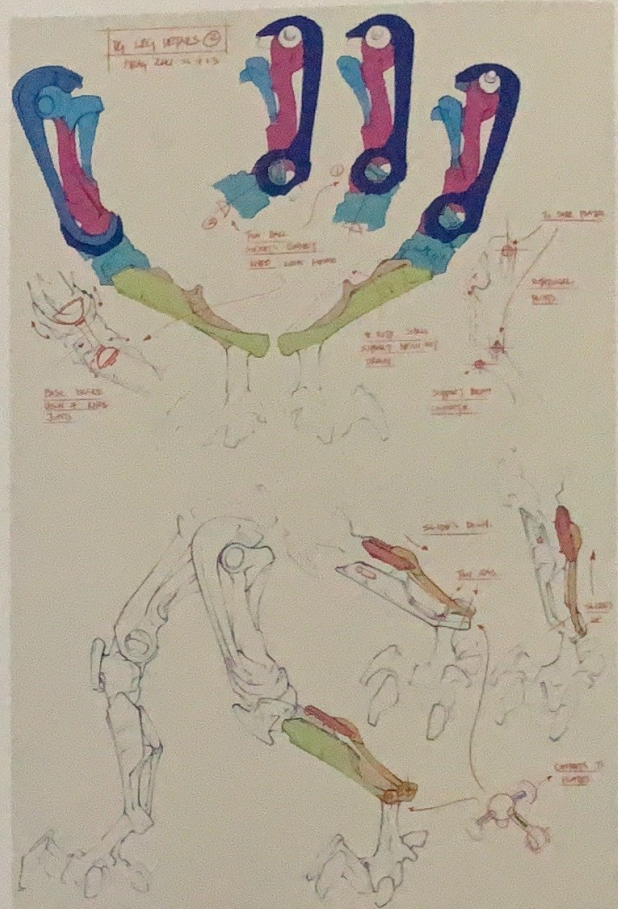


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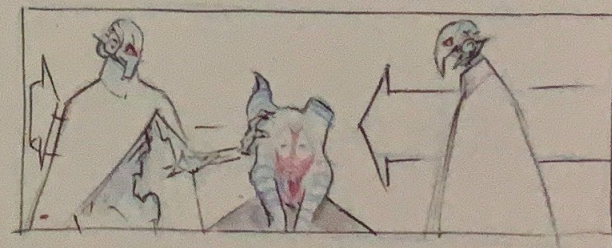
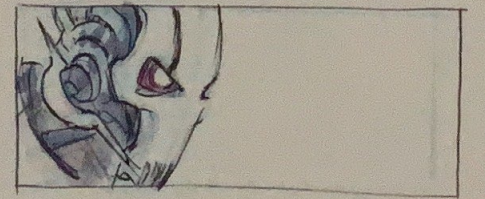
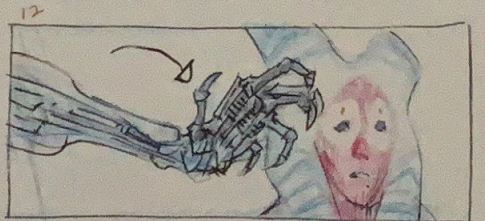
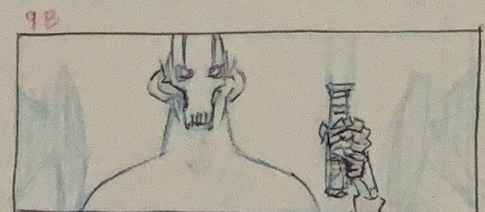
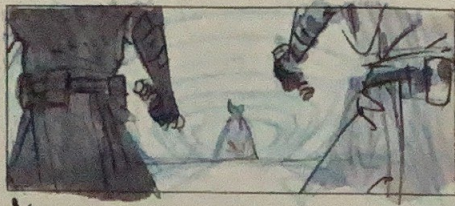


* WITH ARM SPLIT
WITHOUT GUT PLATE & CAPE

GENERAL GRIEVOUS
DETAILS
DREW THOMPSON
5-28-03
SW III



HALLWAY
(REVISIONS)
6-18-03



9A

2A

2B

3

9C

9B

12

13

10

14A

14B

14C

8

11

“Making a film is an evolutionary process for George. That’s the key phrase. So you have to be quick and nimble when he makes a suggestion.”

Rick McCallum / Producer

EP3 - Matchmove Plate Information Sheet						
SCENE#	6	LOCATION	10-10-10	DATE	7/01	
SHOT DESCRIPTION	Raid		CAM Report	4 Perf or 8 Perf		
CAMERA & LENS Information						
Camera	Lens	Height	Tilt	Pan	Dutch/Roll	FPS
Filter	Film Stock					FOCUS
Camera Mount	sticks / crane / dolly / steadicam / car					
Camera Move	lock-off / pan/tilt / dutch / roll / dolly / boom / crane					
Take	Lens	Notes				
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4.97

was mostly robot with a human interior. So it was a flip of the same thing. Again, a circle.

Paul Duncan I like the fact that you gave Grievous a cough because it echoed Vader's labored breathing. Grievous foreshadows what was to come for Anakin.

George Lucas Man-machine relationships are symbiotic too, and I wanted that idea to be impregnated into this world. I did not want humans and robots to be separated because the key character is obviously a combination of the two. I wanted the idea that there are more like him.

Paul Duncan You added dialogue like "Roger, Roger" to the battle droids that give them a little bit of whimsy.

George Lucas It's funny to have robots with humanity, but I don't think it works to give robots human traits. I think it's more interesting when they are robot personalities, like Artoo, where they're funny because they don't fit. ThreePIO can speak many languages but he's got a big blind spot—he's dumb in the way computers are dumb, which is, "Oh, they never told me that." He's just following instructions, which leaves gaps in his intelligence.

Paul Duncan He's a translator, but he doesn't understand humans.

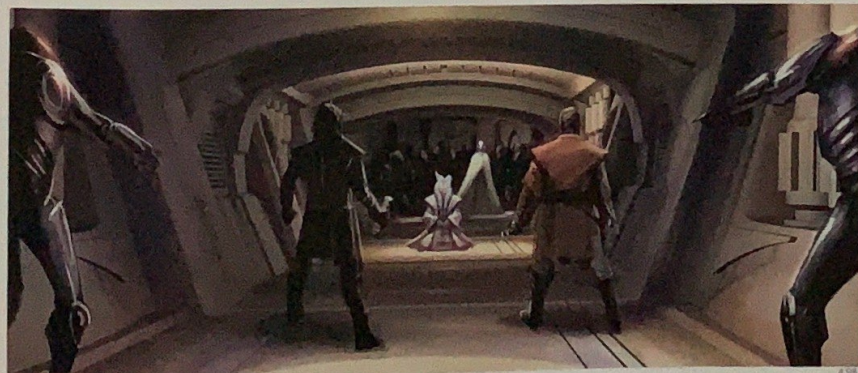
George Lucas No. He doesn't understand emotions.

Paul Duncan That's the irony of the character, but there's another irony in that Anakin is the one who created him.

George Lucas It is an irony, but in the end it's poetic. Anakin likes to build things, but he's just a kid. He doesn't build a super droid, but a translator droid from the junk that's lying around.



4.98



4.99

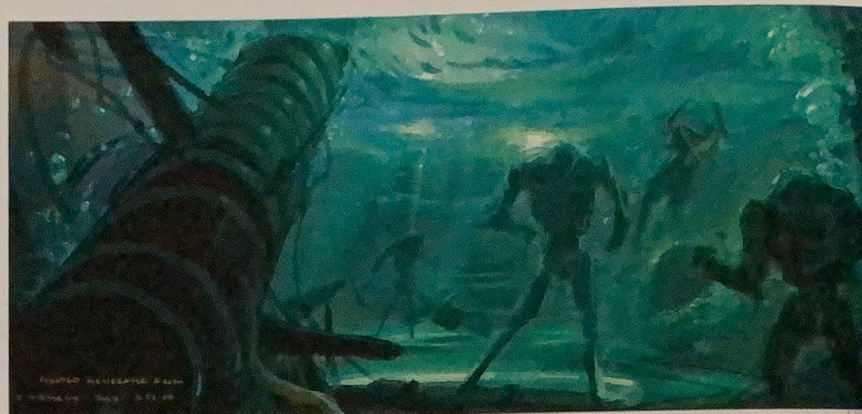
- 4.96 Derek Thompson's storyboards depicting the murder of Jedi Master Shaak Ti (June 15, 2003). Shaak Ti was protecting Palpatine when she was captured by Grievous. During their regular meetings the storyboard artists made rough sketches as Lucas described events in a scene. These would be refined and sequenced into storyboards and shown to Lucas, who would explore multiple iterations of the scene.
- 4.97 The Matchmove Plate Information Sheet for scene V6 shows the precise location of Obi-Wan and Anakin with respect to Grievous and Shaak Ti and the camera position (August 19, 2003). Matchmove sheets were created for every shot so that ILM had all the information about the camera and character locations and movements to replicate the scene in a 3-D CG modeling space.
- 4.98 The design team produced a visual script for the cast and crew. This visual script art for scene 6 shows Anakin and Obi-Wan's first encounter with Grievous, who holds Shaak Ti hostage.
- 4.99 Lucas (right) directing Orli Shoshan prior to filming Shaak Ti's demise. This scene was filmed but eventually deleted.
- 4.100 Previsualization artist Gregory Ricci depicts Grievous running his lightsaber through Shaak Ti (January 15, 2004).



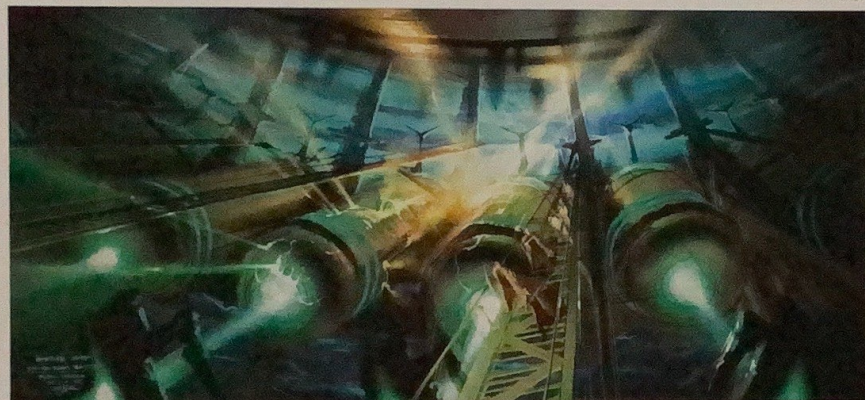
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4.101



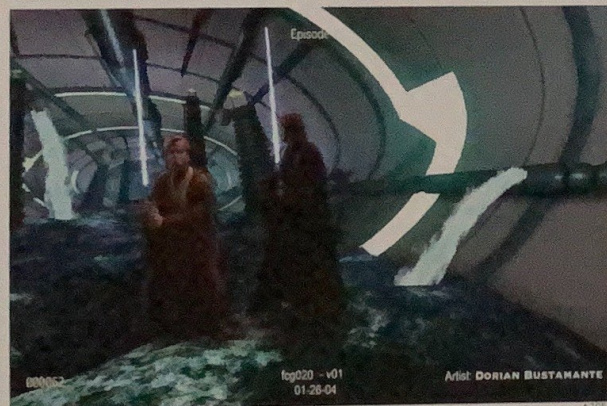
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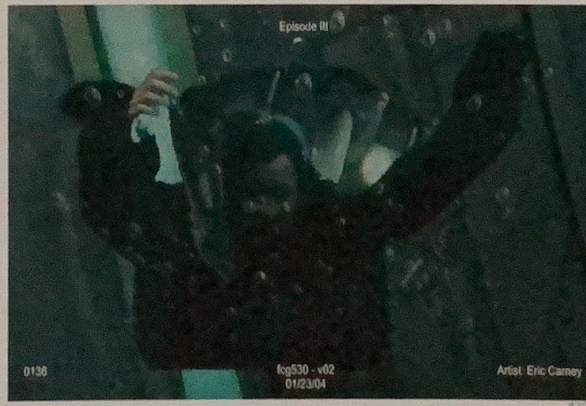
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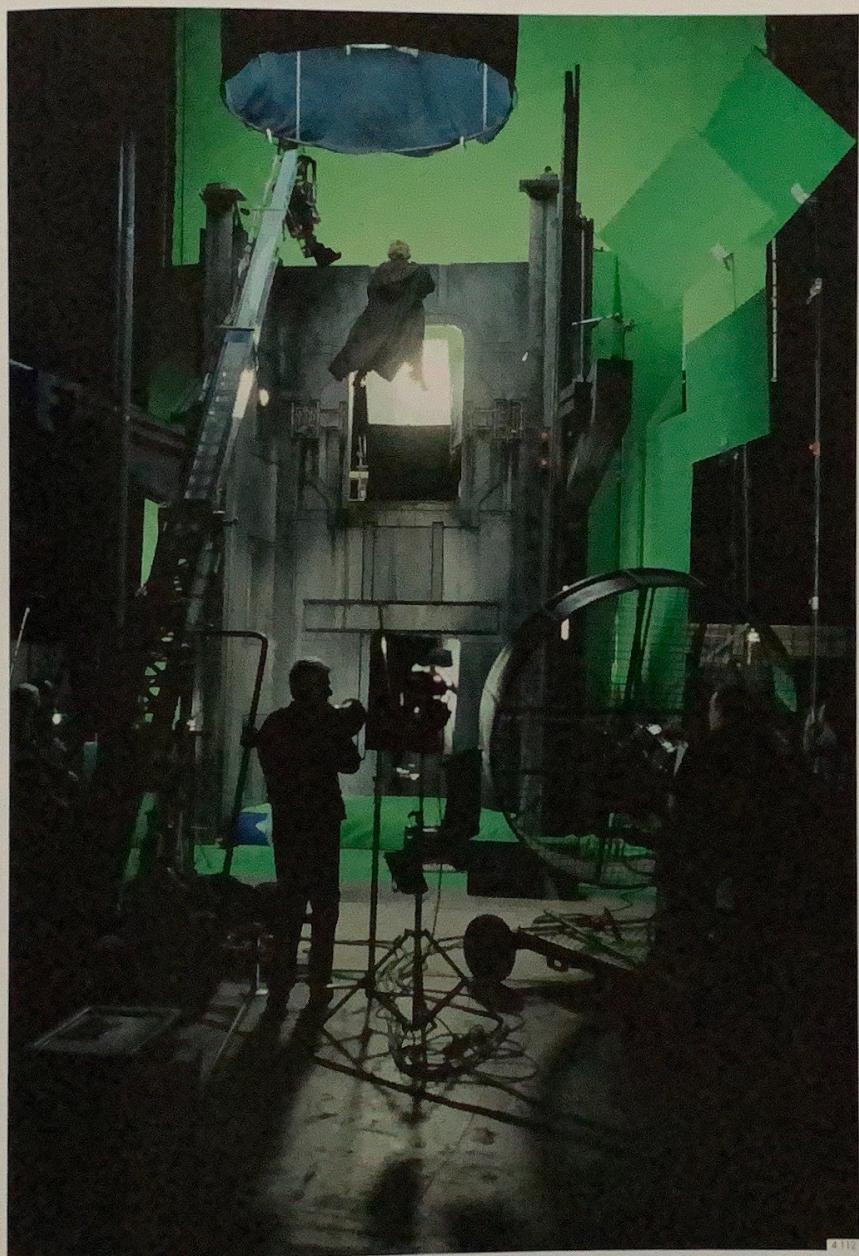


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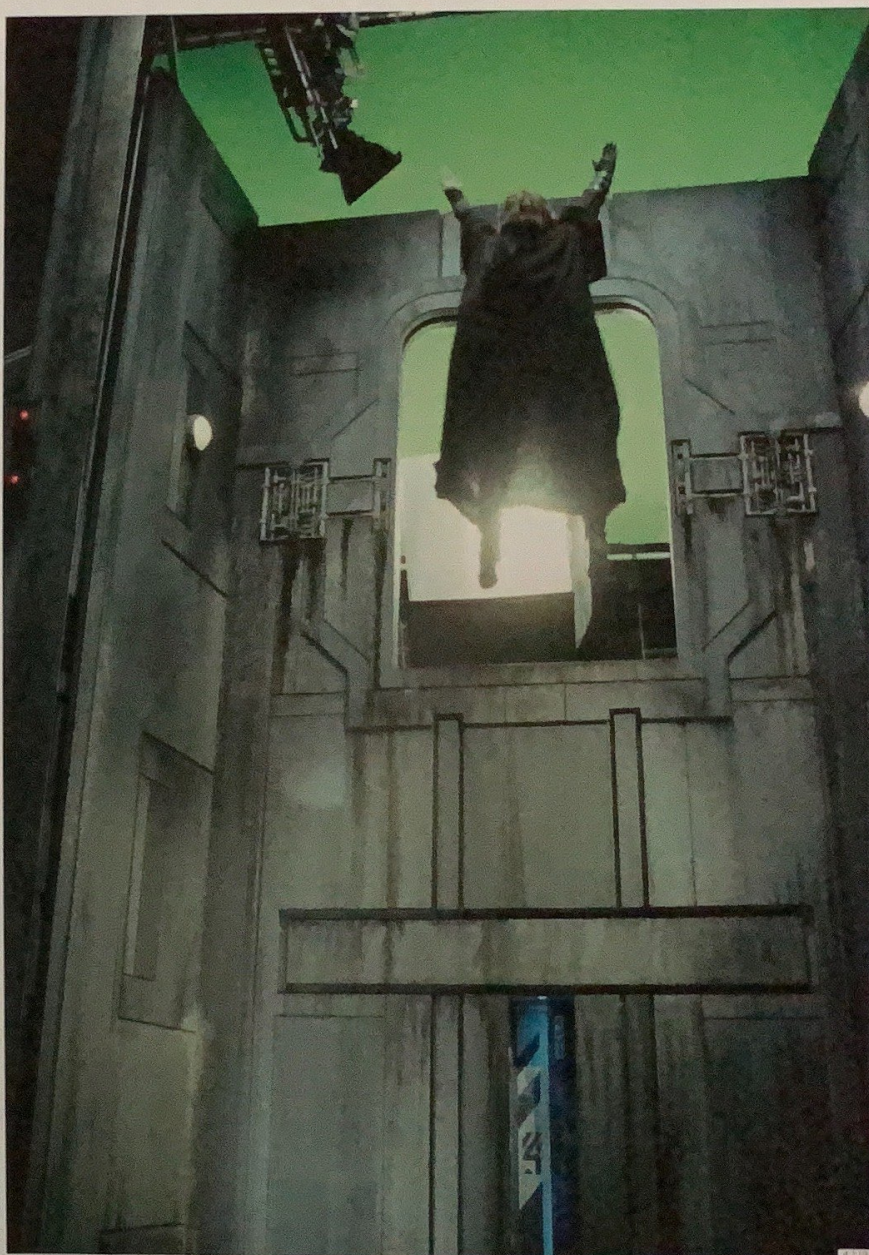
- 4.101 Following the murder of Shaak Ti, Obi-Wan and Anakin are surrounded. They use their lightsabers to cut a hole in the floor and land in a generator room filled with highly flammable fuel. Ryan Church's concept shows the room filling with fuel and droids breaking in (October 31, 2002).
- 4.102 Erik Tiemens's artwork shows super battle droids inside the flooded generator room as the Jedi rise to the surface for air (May 22, 2003).
- 4.103 Church's concept for Jedi and clone troopers under attack in a turbine room (October 31, 2002).
- 4.104 Church's unrealized idea for a corridor battle on the Separatist cruiser with the ship upside down and the hull ruptured (October 31, 2002).
- 4.105 Digital storyboard by Dorian Bustamante showing Obi-Wan and Anakin in the generator room as it floods (January 26, 2004). The Jedi quickly extinguish their lightsabers as the room fills with the flammable fluid.
- 4.106 Digital storyboard by Eric Carney showing Obi-Wan being dragged underwater by a super battle droid (January 23, 2004).
- 4.107 The generator room sequence was shot using a water tank on August 14 and 15, 2003. Here Lucas (center, seated) and the crew observe the filming from different angles as it happens. The sequence was shot but eventually not used.







4.110



4.111

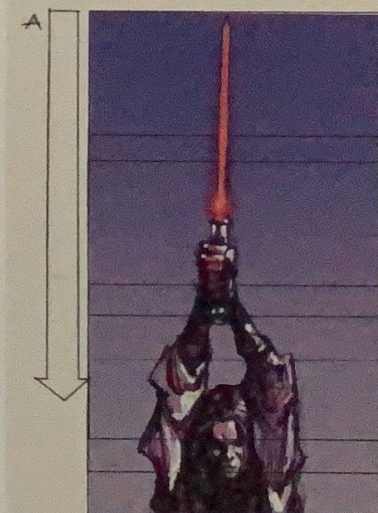
“When I shoot, I have two cameras: A camera and B camera. They are shooting either different angles (one’ll be tighter than the other) or they’ll be shooting close-ups (one of one actor, one of the other actor). That way if I get a really good performance I’m able to use it from two different angles.”

George Lucas



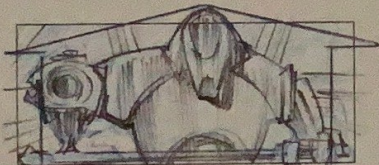
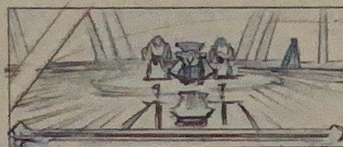
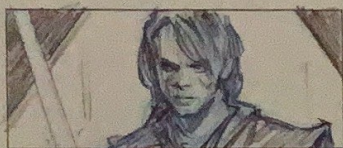
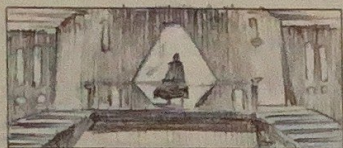


- 4.114 Filming Anakin and Obi-Wan's battle with Count Dooku on the General's Quarters set. Lucas uses two digital cameras to shoot the same scene from different perspectives.
- 4.115 Hayden Christensen and Ewan McGregor fighting Kyle Rowling, who doubled Count Dooku for the fight scenes.
- 4.116 Unlike their previous encounter with Count Dooku, Anakin and Obi-Wan work together as a team to overcome him.
- 4.117 Erik Tiemens's artwork shows a captured Palpatine in a seat that echoes the Emperor's throne at the end of Episode VI (May 13, 2003).
- 4.118 Iain McCaig's concept for Anakin dispatching Count Dooku (March 17, 2003). The downward arrow indicates the camera movement as Anakin performs the execution at Palpatine's behest. The lightsaber is red, indicating that Anakin acquired Dooku's weapon, but also foreshadows Anakin's path to the dark side.



"He was an unarmed prisoner. I shouldn't have done that, Chancellor. It's not the Jedi way."

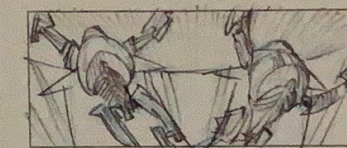
Anakin Skywalker



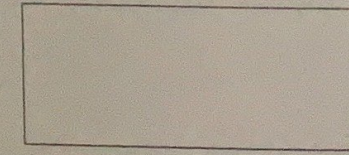
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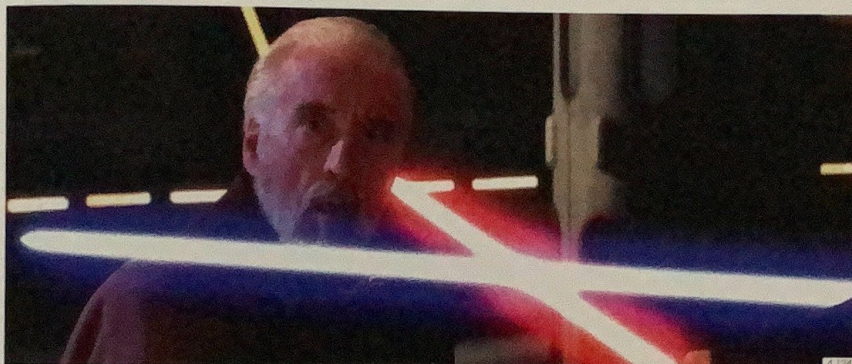
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4.121



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4.124

characters leftover from the previous films, and they're all running around yipping and yelling and saying, "What about me?" I have to solve these problems, because what I thought was going to happen isn't happening. I got far enough with the outline to realize that the bridge between Episode III and Episode IV still had them about 50 feet apart. So I had to disassemble Episode III and rethink it, to make it line up with Episode IV. This one is like a Rubik's Cube, with a lot of puzzle-solving. It has got a lot of characters, and a lot of things that have to happen. I don't want it to be a three-hour movie, and I don't want it to be boring.

On January 31, 2003, Lucas delivered the first rough draft of *Star Wars: Episode III Revenge of the Sith* to Rick McCallum. Running to 55 pages, it was not for general circulation but would allow the producer to plan the production in Australia.

The story opens with Anakin and Obi-Wan flying through the battle over Coruscant, boarding General Grievous's ship, and fighting Count Dooku to rescue Chancellor Palpatine. Grievous escapes. Anakin beheads Dooku at Palpatine's urging, and the ship crash-lands on Coruscant.

A number of scenes set up the drama: Padmé announces she is pregnant; Anakin has a nightmare that she dies; Palpatine suggests Anakin should be his representative on the Jedi Council; Yoda, on Kashyyyk, locates Grievous on Utapau thanks to the help of a 10-year-old Han Solo; and Obi-Wan is sent with thousands of clone troopers to Utapau to capture Grievous.

Obi-Wan duels with Grievous and a chase ensues with Grievous on his wheel scooter and Obi-Wan on a lizard.

With Obi-Wan's defeat of Grievous, Mace Windu visits Palpatine so that a peace can be negotiated to bring about the end of the war. Palpatine refuses and attacks Windu with Force lightning. Again, at Palpatine's urging, Anakin cuts off Windu's sword hand and the Jedi Master dies under Palpatine's onslaught. Palpatine, now transformed into Darth Sidious, issues Order 66 to the clone troops, and the galaxy-wide execution of the Jedi commences. Yoda, forewarned by fluctuations in the Force, defeats the troopers and escapes. Obi-Wan is shot off his lizard, falls to the bottom of the sink hole, climbs out, and escapes in a starfighter. Meanwhile, Darth Sidious seduces Anakin to the dark side with the promise of power to save Padmé from death, and makes a startling revelation:

Rough Draft Script/January 31, 2003

Darth Sidious I have waited all these years for you to fulfill your destiny. I arranged for your conception. I used the power of the Force to will the midichlorians to start the cell division that created you.

Anakin I don't believe you.

Darth Sidious Ahhh, but you know it's true. When you clear your mind, you will sense the truth. You could almost think of me as your father.

Yoda and Obi-Wan secretly return to the Jedi Temple on Coruscant and witness via hologram recordings both Anakin's

slaughter of the Jedi younglings and his anointment as Darth Vader, Lord of the Sith, by Darth Sidious. Yoda and Bail Organa flee to Polis Massa, while Obi-Wan visits Padmé in an attempt to hunt down Anakin.

Padmé refuses to help, but journeys to Mustafar, where Anakin has killed all the Separatist leaders. When Obi-Wan reveals himself, having sneaked aboard Padmé's ship, Anakin believes his wife has betrayed him, Force-chokes her, and throws her against a wall. The former friends then duel until Obi-Wan cuts off Anakin's legs; Anakin falls down an embankment and catches fire. Obi-Wan picks up Anakin's lightsaber and takes Padmé to Polis Massa, while Darth Sidious brings Anakin to Coruscant where, because his wounds are so severe, he must be encased in mechanical armor to keep him alive.

On Polis Massa, Padmé dies while giving birth to twins. Padmé's funeral is held on Naboo. Yoda exiles himself on Dagobah. Bail Organa takes Leia, the baby girl, to Alderaan, to adopt her as his own. Obi-Wan places the baby boy, Luke, with



4.125

4.119-122 Storyboard concepts by Iain McCaig depicting the rescue of Palpatine by Anakin. Anakin has to battle super battle droids. Palpatine is seated on a throne-like seat but in stocks; Anakin defeats the droid guards; Anakin unsheathes two lightsabers.

4.123 Final frame showing a surprised Dooku (Christopher Lee) realizing that Palpatine has betrayed him (Palpatine is his master Darth Sidious) and that he is about to meet his demise. This is the first time that Anakin acquires a red lightsaber, red being the color of dark side blades. The image also recalls the crossed lightsabers in the final duel of Episode VI.

4.124 Erik Tiemens's visual script art for scene 26b showing Dooku and his dismembered arm on the ground, and Anakin standing over him with both lightsabers.

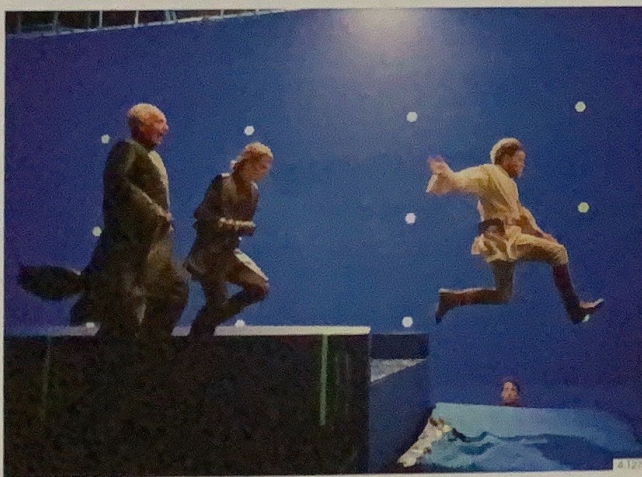
4.125 Filming the decapitation of Count Dooku. Anakin takes another step toward the dark side.



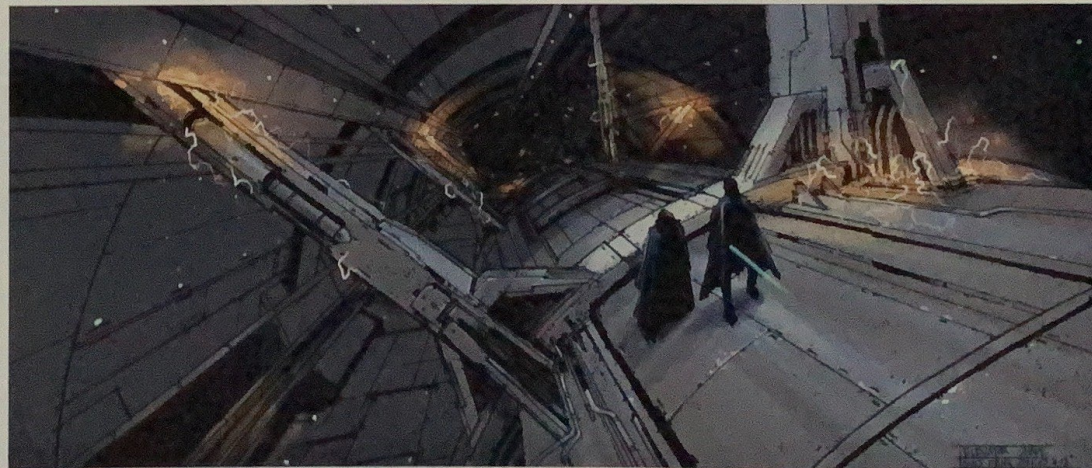
4.125



4.125



4.126



4.128

Owen Lars on Tatooine, with the intent of watching over him from afar. Yoda tells Obi-Wan that in his solitude he is to train under Qui-Gon Jinn, who had studied with the Ancient Order of the Whills.

The final scene shows the Emperor, Governor Tarkin, and Darth Vader on the bridge of a Star Destroyer, looking out at the construction of a Death Star in space.

Rick McCallum Already, the crew in Australia has enough information from George to begin construction of environments, props, and costumes. After that, George will be writing a more formal first draft, and will keep revising right up until the start of shooting.

Virtual Filmmaking

Ryan Church I told everybody—Warren, Zhu, T.J., everybody—to do something you want to see for the end fight. It's got to have lava, and it's got to have lightsabers. Over time George had let us know which Mustafar fight ideas he liked, and which were dumb, so we quickly put the "OK" sketches in the order that we thought worked best. "Let's start in a confined space in the war room, start close and go wide."

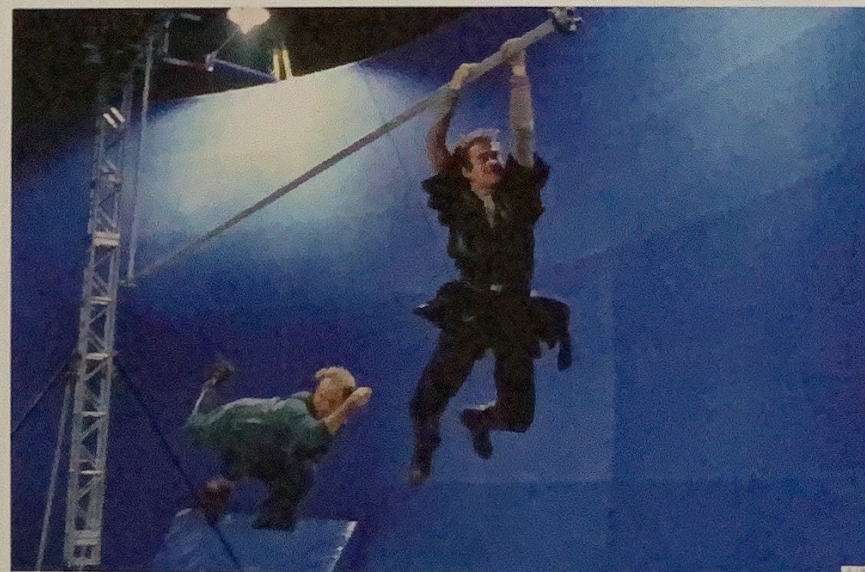
Paul Duncan From the war room, it goes out onto the balcony, then onto the pipes, and then the big collection panels.

Ryan Church Right, T.J. built this crude 3-D model of the whole complex, we showed that to George, and we sent that over to the animatics guys.



⑦ HIGH ANGLE FACING DOOR (EXIT)

4.129



4.130

At the beginning of March 2003 the animatics team, led by Daniel Gregoire, started working on developing assets and sequences.

Daniel Gregoire / Previsualization Supervisor We take art and storyboards from the art department and mix and match them all together, along with live-action stuff. We build everything in 3-D. We texture it, we light it, we go through every step that ILM would go through, only we do it in a more fundamental manner so that it's easy, fast, and flexible.

Rick McCallum At lunch, after we'd had our concept design meetings, George would go up with a tuna fish sandwich and spend hours with the sequences, going through all the shots that he wanted.

Daniel Gregoire When George says, "I've got this idea. I want this shot. I just thought of it," in half a day or less we can have a viable option for him to put into the film to see if it works.

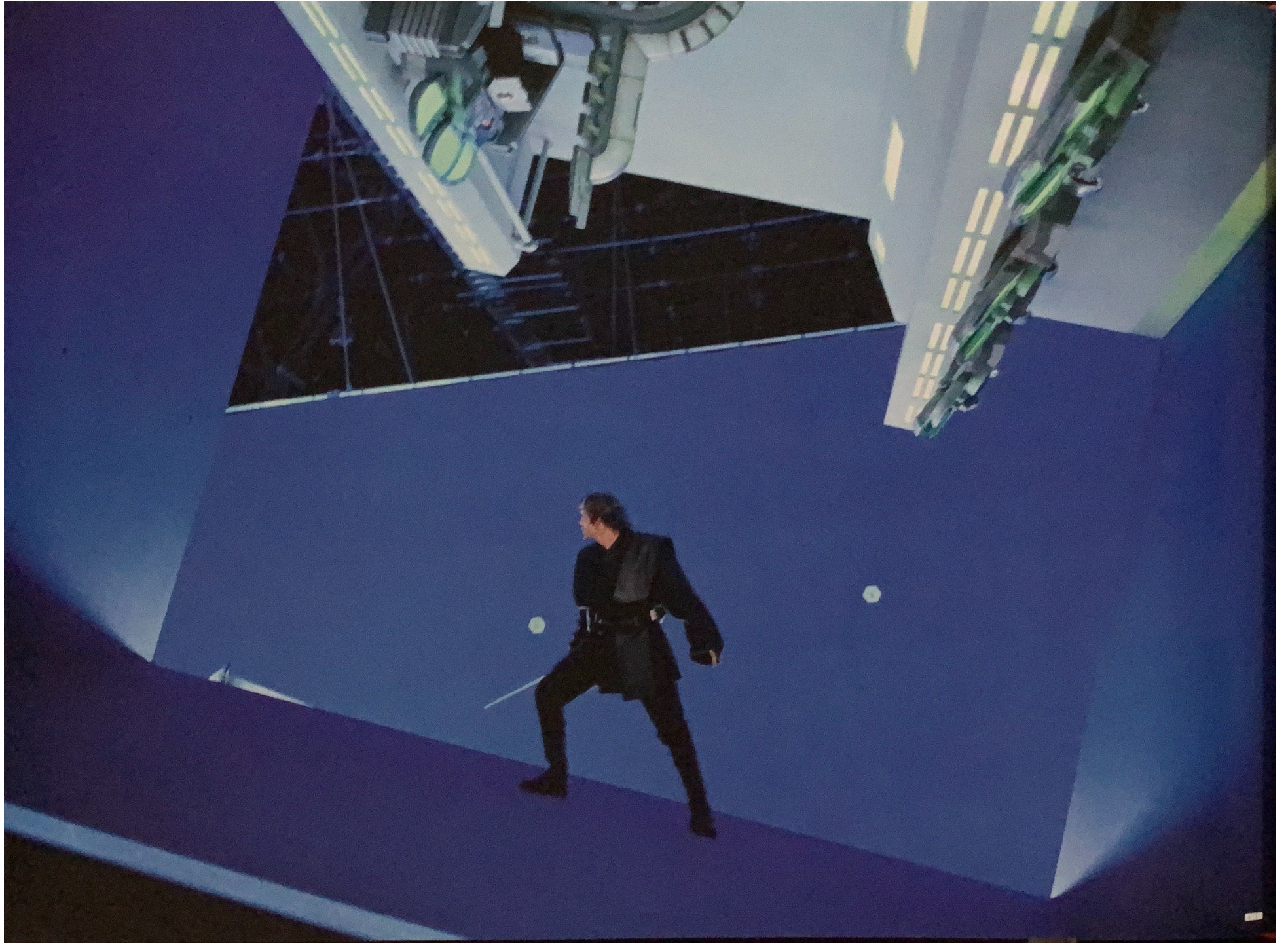
4.125 **Ryan Church's** concept art shows the space battle between mile-long Star Destroyers in the upper atmosphere of Coruscant (March 12, 2003).

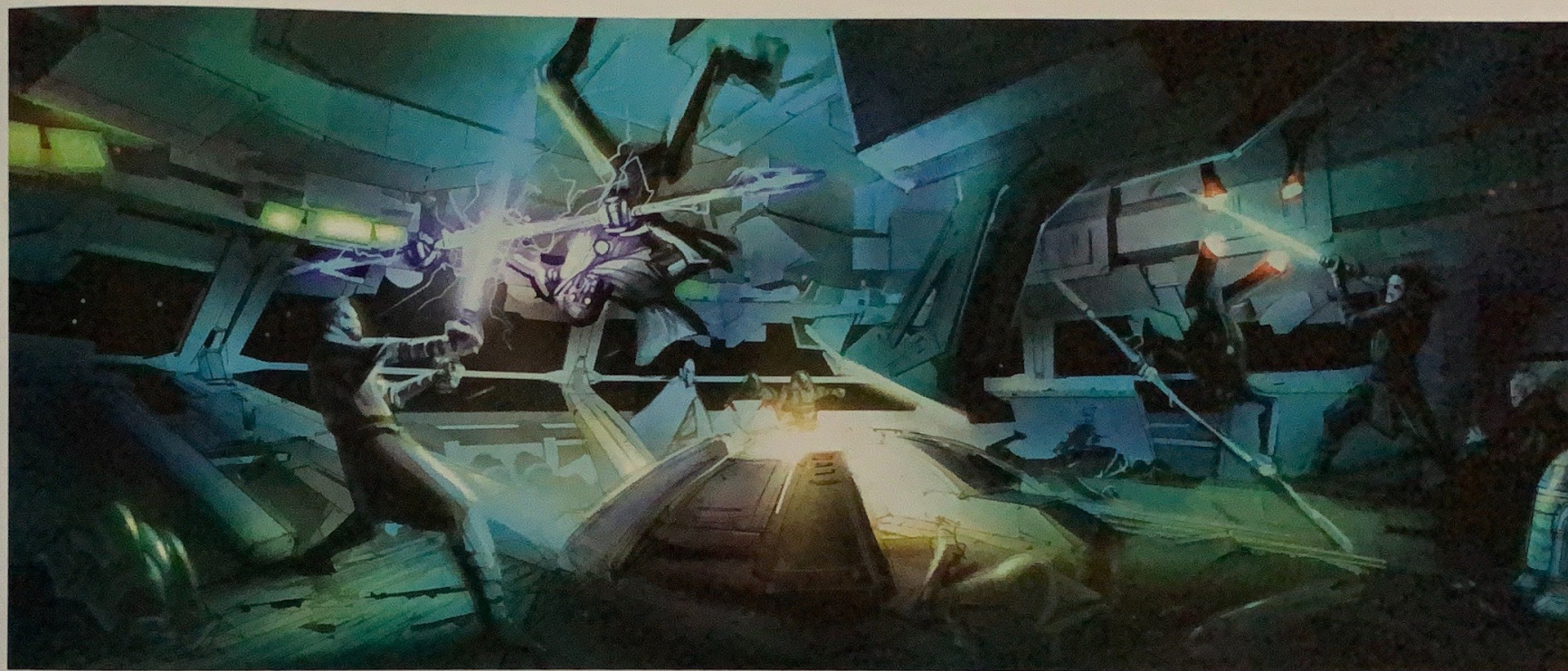
4.127 **The Separatist** cruiser is damaged and turns on its side. Filming Joss McDiarmid, Hayden Christensen, and Ewan McGregor as the Jedi and Palpatine run down the elevator shaft to jump into a doorway and avoid the oncoming elevator.

4.128 **Feng Zhu's** concept art for the elevator shaft on its side (March 11, 2003).

4.129 **Concept art** by T.J. Frame showing Obi-Wan, Anakin, and Palpatine inside the hangar. The ship is on its side, with the top of the ship on the right. The Jedi are trying to reach the exit, shown in the distance, so must climb along the pipes. Obi-Wan is in front, followed by Anakin, with Palpatine tied to him by a line. At the same time R2-D2 flies from "A" to "B."

4.130 **Filming** a slant rideomatic of Anakin (stunt double Ben Cuko, right) and Palpatine (stunt double Bob Borkes) creeping along the hangar pipe. The scene was not used in the movie.

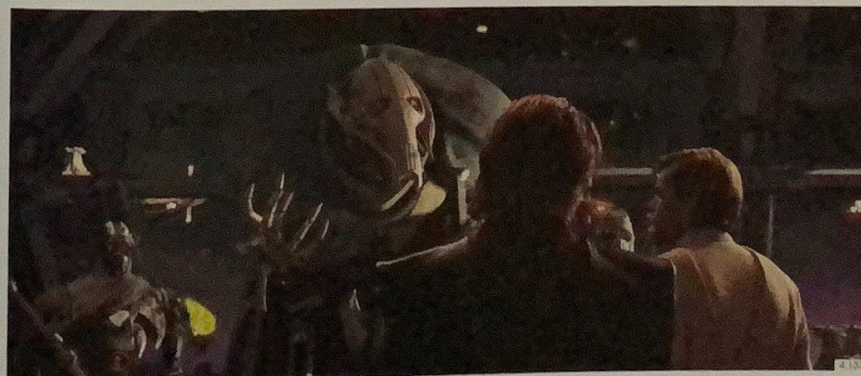




4.131 During scene 43 the Separatist cruiser turns upside down—General Grievous and his guards magnetize to the floor while Anakin and Obi-Wan continue fighting on the ceiling. The Bridge set was built inside a giant revolving drum and stunt double Ben Cooke played Anakin in the scene.

4.132 Often, multiple artists separately contributed composition, backgrounds, characters, and lighting details to the same image in the visual script. This visual script image for scene 43c shows Obi-Wan and Anakin battling General Grievous and his guards, while Palpatine and Artoo keep clear of the action on the right. The idea was filmed but cut from the scene.

4.133–134 Grievous captures Anakin and Obi-Wan, and he is ready to add their lightsabers to his collection. However, Artoo creates a distraction, giving the Jedi an opportunity to attack and take control of the ship.

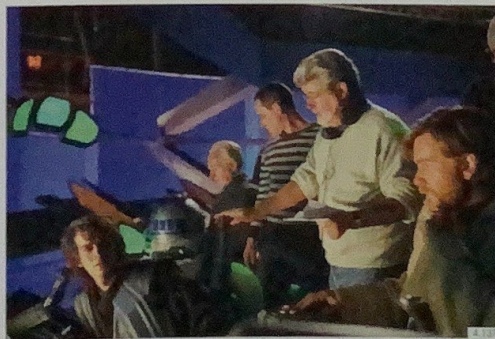






4.135

- 4.135 Warren Fu's concept for the dramatic splitting of the Separatist cruiser (December 12, 2002). The ship is now within the gravitational pull of Coruscant.
- 4.136 Ryan Church's concept of a Federation cruiser crash site outside the Jedi Temple (November 5, 2002). Church: "My thought for this was that the ship is coming in to destroy the Jedi Temple, and all the Jedi work together to somehow use the Force to push it away."
- 4.137 Lucas (center) directing the bridge sequence as Anakin attempts to "land" the ship.
- 4.138 Final frame on the ship's bridge as the Jedi and Palpatine prepare to crash-land on Coruscant.



4.137



4.138



4.139

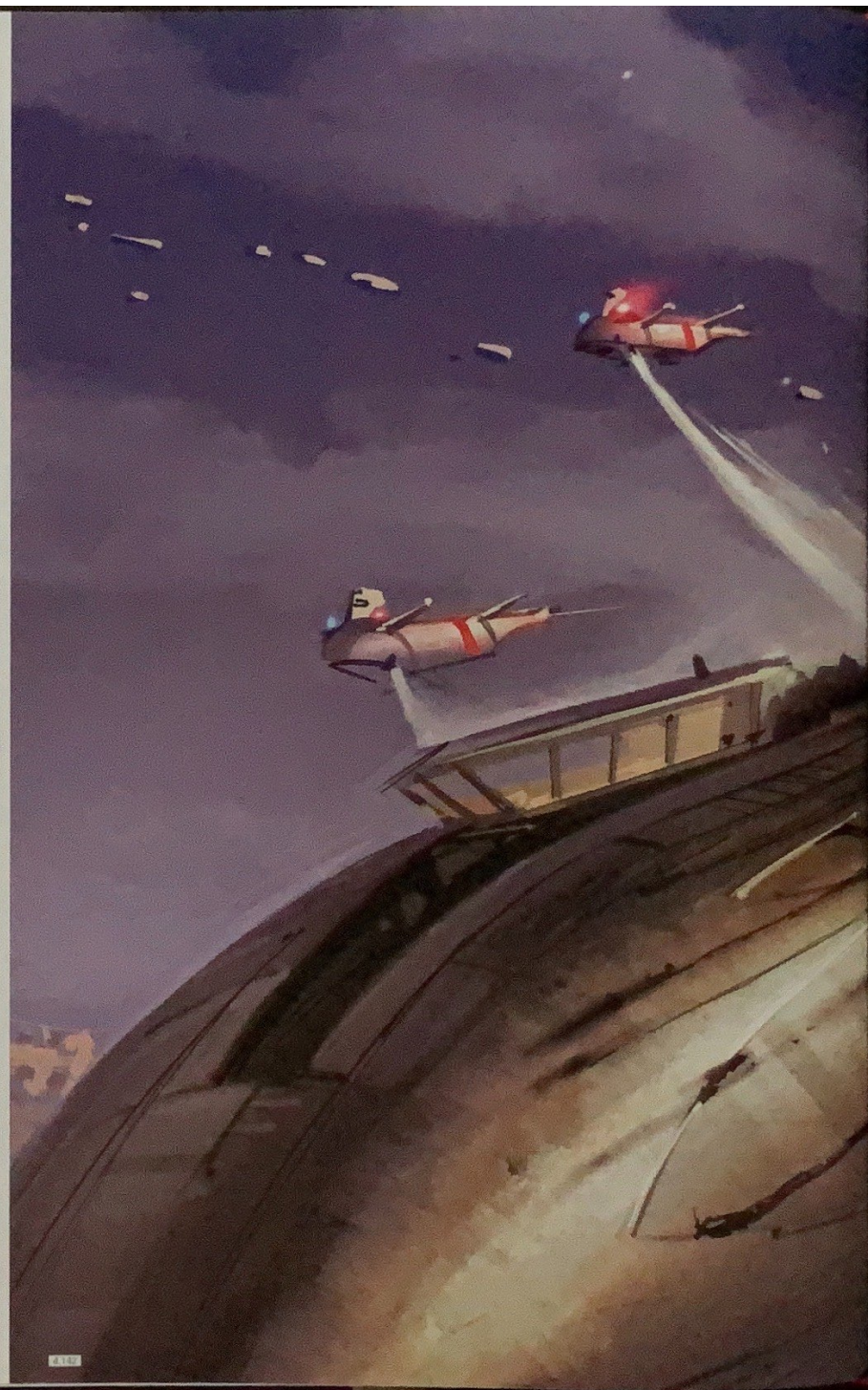


4.140



4.141

- 4.139-140 The ship descends rapidly, accompanied by firefighting ships, but Anakin manages to steer it towards a landing strip, preventing major casualties on the ground.
- 4.141 Ryan Church's concept for the crashed cruiser (October 20, 2003).
- 4.142 Church's concept shows the Separatist cruiser's dramatic descent, with Coruscant fire ships attempting to extinguish the flames as it falls towards the surface of the planet (February 23, 2003).



4.142



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4.143

Rick McCallum It was no different than for live action in terms of production, except that George was working with four or five kids instead of sitting there with 150 to 200 crewmembers. It's virtual filmmaking.

Daniel Gregoire We started earlier than Episode II and with more people on staff with the express intent of providing a lot more material to Lucas. For Episode III, the concentration has been more on shot quality and substance. We're spending more time on character animation, shot blocking, and proper cinematic techniques than we ever have before. It is important that we try to be more realistic so when it comes time to recreate shots on set or at ILM, George has confidence that they will work. This by no means hinders us creatively. In fact, it has made our work more easily edited and believable, leading to more exciting sequences.

George Lucas When the animatics guys deliver the video-matics that we're after, editor Ben Burtt starts to cut those together. After a while, I'll start working with Ben in tightening the editing on

those so that around the time we start shooting the film we've got a pretty tight version of what these action sequences look like.

Daniel Gregoire We went through 23 revisions of the opening space battle in the previzualization department, and we were able to do that for a fraction of the cost of ILM.

Rick McCallum It wasn't so much about saving time, because you were putting the work in up front, but the economic savings—the cost efficiency of being able to walk onto the set on the first day with 60 to 70 minutes of film cut together that you could show the actors and the crew—made the whole system incredibly efficient.

Lockdown Mode

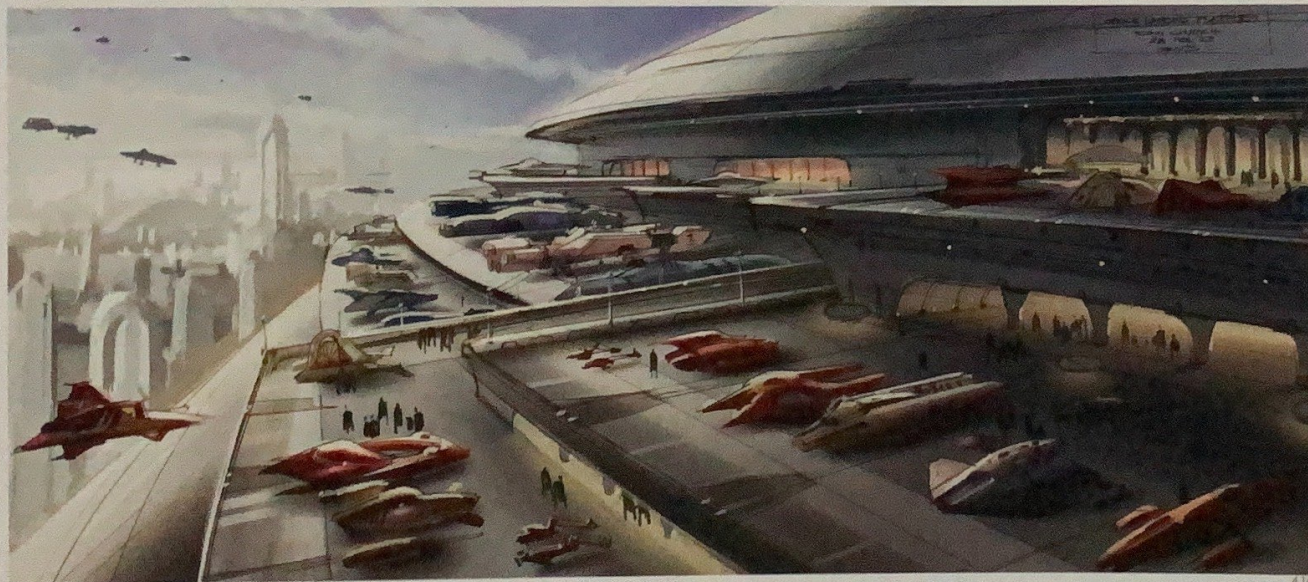
George Lucas Here in San Francisco I was working on the script, and I was working with the designers, and the editors, and the

"I studied Carrie Fisher's performance, especially in Empire. I tried to get more of the spunk and grooviness of those films into the role...and of course the lip gloss."

Natalie Portman



4.145



4.144

previzualization people. In Australia, Rick was in charge of the art department, the wardrobe department, the prop department, and the camera department to coordinate what we were developing over here with what they were doing over there.

Rick McCallum / March 14, 2003 It's hard to give you a progress report of where we are because I'm a man without a script, which is like being on a sea without a ship. But everybody's focusing on what little information we get each week. We started set construction two weeks ago, the costume department are in the middle of fabricating a number of costumes, and the creature shop will start in the next two weeks. So everything is moving. We're heading for a destination, but we're not sure where we're going to end up.

George Lucas / March 21, 2003 I've written about half of the first draft. I still have elements, like Artoo-Detoo and Threepio, which I haven't fit in everywhere. They're in one scene, but I haven't filled in their reality yet, because the film doesn't center on them.

I am very diligent about going to work at 8:30 every morning and leaving at 6:00 every night. I get it done: I write five pages a day. But left to my own reality, I would probably write a page a day. I force myself. It becomes agonizing to get those other four pages.

Ryan Church I would go to George's house twice a week and bring over a packet of artwork that we were going to discuss. His inspiration room has a little glass wall that hangs out over some trees and the other walls are books. We would



4.143 Ryan Church's visual script image for scene 73 showing the Chancellor's shuttle flying toward the Senate building.

4.144 Concept art for the Senate landing platform by Church (February 25, 2003).

4.145 Final frame of senators welcoming the safe return of Palpatine.

4.146 As the senators make their way into the Senate building, Anakin lags behind and spies Padmé hiding discreetly behind one of the columns in this concept art by Church (June 6, 2003).

4.147 Iain McCaig's costume design for Padmé with a background image of her holding a bird of prey on her arm (October 30, 2002).

4.148-149 During the reunion of Anakin and Padmé (Natalie Portman), she reveals that she is pregnant. For Anakin it is "The happiest moment of my life."

sit there talking with production designer Gavin Bocquet on the phone from Australia.

While we were waiting for the phone connection, we would talk about the books on his wall, or about the designs. Design is my whole life. It's a tiny part of his life, but he knows it as well as I do. It's very intimidating. You begin to realize that he's not like you and I. His brain moves much faster, and he's got a much denser amount of material to hold and deal with at any given time.

That's where I had some of the best discussions about the designs. I made notes and little sketches, and came back to the team and filled them in on what George wanted to see from us. Erik and I had already done the establishing shot backgrounds, and they now lived in the animatics, but now George was asking for different lighting, different colors. He'd say, "Pinker, more like Arizona Highways," referring to the magazine.

Gavin Bocquet was in charge of designing and constructing 72 physical sets.

Ryan Church George was in cost-cutting mode. He said to us, "We're in lockdown mode here. I'm not building an asset twice. You get to build it in CG, or you get to build it as a real thing, but choose one." He's spending his own money so it's understandable that he wants us to find out how to make the movie cheaper.

Gavin Bocquet / Production Designer For the previous two films we sent photographs of card models to give George an idea of the sets. For this film, for the first time, the preliminary concept designs got turned into 3-D models and we send him a small animation for him to approve the general idea. Then we do a more sophisticated model with more detail on it, and do an animation of that. This gives George a much better feel for the whole environment that we're building. And for me too. Normally, as the sets are being constructed, there's always a slight nervousness because you're thinking about size and scale and proportions. Should the set be four feet wider or shorter or higher? The advantage of these 3-D models is that they give an extra confirmation that you've analyzed the space well. And as the sets are going up on this film I haven't been surprised about anything I've walked into.

Rick McCallum Stunt coordinator Nick Gillard started in early April.

Nick Gillard / Stunt Coordinator I get the blueprints for the set from the art department and we mark them out with tape on the floor of our rehearsal room. We have to know when we're going through doors. We have to know when we're going to turn left and right to match the set, because otherwise you're turning straight into a wall. Once we've test shot everything, I'll edit it on

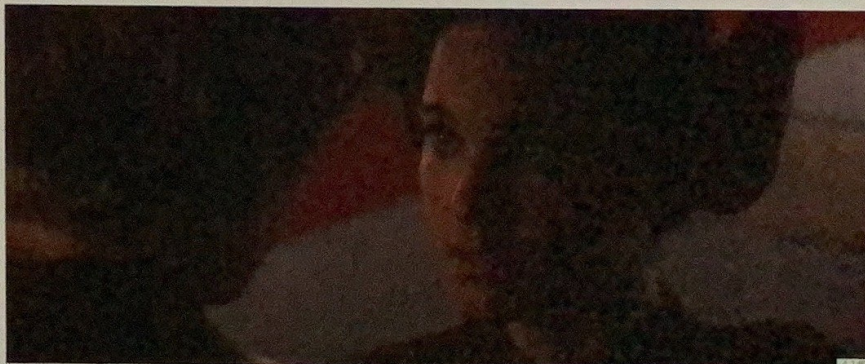


my computer, and it'll go to the Ranch for George to look at. Anything that he doesn't like, he can change.

Iain McCaig General Grievous is meant to be the big scary bad guy in the film, but I wasn't scared. I came up with the idea that Jedi Master Shook Ti was protecting Palpatine, got captured, and is aboard the Separatist ship. When Anakin and Obi-Wan come into the room with General Grievous, Grievous should have her with his hand around her throat, and he should break her neck. George is considering working it into the script.

Paul Duncan During your story conference with Leigh Brackett in November 1977, you tell how Han had been orphaned on the Wookiee planet, been raised by Wookiees, and befriended Chewbacca. You reanimated that idea for Episode III and in the rough draft script a young Han Solo helped Yoda on Kashyyyk.

George Lucas I rejected it after I read it. I said, "This is stupid." I was being a smart aleck, tying things together, and being a little too clever for my own good.





On April 13, Lucas delivered the 131-page first draft of the script, which contains many refinements and action details. Shock II was added to the opening sequence on the Separatist cruiser, where she is killed by Grievous in front of Anakin and Qui-Won. Han Solo had been removed; instead Chancellor Palpatine sends Qui-Won to Utapau to locate General Grievous. Grievous now has two arms that separate into four arms, and he has been trained how to wield lightsabers. Palpatine no longer claims that he arranged for Anakin's conception, although he does tell the young Jedi the story of Darth Plagueis who could stop life-forms from dying. After seeing the holograms in the Jedi Temple, Yoda insists that Qui-Won kill Anakin, and Yoda goes to confront Palpatine. Yoda is defeated, and Bail Organa helps him escape. At the end, when Darth Vader emerges from surgery, he asks about Padmé and is told by Darth Sidious, "I'm afraid she was killed by a Jedi... she is no longer our concern."

George Lucas As I write the next drafts there'll be a lot more cutting and pasting. Certain sequences will be tight, and I'll jump through them. The last thing that will be dealt with is the dialogue because that you can change on the set or even afterward—I'm not known for my dialogue. I think of it as a sound effect, a rhythm, a vocal chorus in the overall soundtrack. Mostly, everything is visual.

On June 13, the revised second draft script was delivered. At 135 pages it was significantly more polished, with characters and motivations more defined. At the end, Padmé dies of a broken heart: Vader is told by Sidious, "I'm afraid she died... It seems in your anger, you killed her," and Vader screams out in pain, and the last shot is now on Tatooine watching the twin suns set.

Three days later George Lucas arrived at the Fox Studios in Sydney, Australia.

George Lucas Our communications are so close between the various departments that I can travel from San Francisco and end up in Sydney the next day, and I know everything that's been going on. I've seen the sets, so there're no surprises. I walk on, and it's like I've been there the whole time.

Rick McCallum He's got a very tight schedule. He starts about 6:30 a.m. and spends a couple of hours on the script. Then he does a walk-through of the sets for about an hour and a half with cinematographer David Tattersall every day.

David Tattersall / Cinematographer When we are working in the total green or blue environment, and probably with one or two small props, then the visual script is referred to much more often.

John Knoll / Visual Effects Supervisor The visual script was put together out at the Ranch. Ryan Church and Erik Tiemens did these beautiful concept pieces of what the different environments



8.102

will look like. Those are extremely helpful for David Tattersall and Gavin Bocquet and George when we're shooting because, especially on sets where we just have the floor and a column, it's good to have a nice concept piece for the whole environment. That very much affects how David lights things, and how George likes to frame things.

David Tattersall My main interest would be to see where the windows are, what the light sources are, what time of day it is. The visual script is also useful for the actors to see.

Rick McCallum Then George usually shoots a test for a half hour: hair and makeup, and lighting tests on the set. Then he spends about an hour and a half with Nick Gillard. Then he lunches with assistant director Colin Fletcher and me. Then he rehearses with the actors from 2:00 to 5:00. From 5:00 to 7:00 we go over any changes he's made that day. Then usually between 7:00 and 8:30 it's working through the schedule again and making adjustments on each day's shooting. Then it's home, dinner, and start off over again.



8.101

- 4.100 Final frame showing General Grievous, who has escaped to Utapau, seeking instruction from Darth Sidious on their future strategy.
- 4.101 Erik Tiemens's concept art for the cavernous spaces below the crust of the planet (April 10, 2003).
- 4.102 The sinkhole planet, Utapau, used to be underwater, hence shells and fossils can be seen as part of the environment, as seen in this Tiemens concept art (January 5, 2003).
- 4.103 Ryan Church's concept for the planet Utapau's surface resembles a sandy ocean floor (April 23, 2004). This was created after the main shoot had concluded, and refers to shot 1.1A.10.

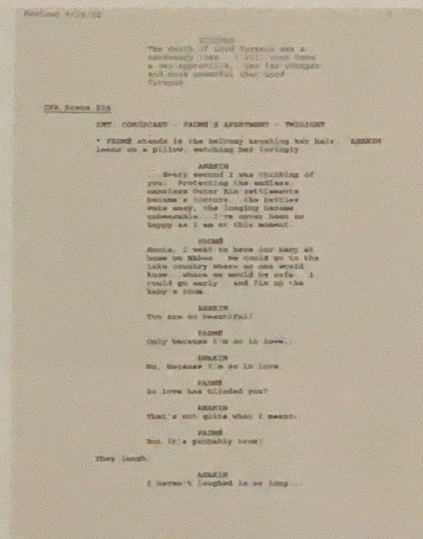


UJA 10
RYAN CHURCH
22 APRIL 2004
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"I wanted to show that this poor guy is trapped by shadows, and she's stuck in the light. And the hand that reaches out to touch her isn't even a human hand anymore."

Iain McCaig



- 4.154 Erik Tiemens's concept for the establishing shot of Padmé's Coruscant apartment at twilight (July 23, 2004).
- 4.155 On the balcony of her apartment Padmé finally gets to spend some time alone with Anakin.
- 4.156 Iain McCaig's very tender depiction of the young Jedi reaching out to make contact with his unborn baby.
- 4.157 Final frame: Anakin has woken from a nightmare in which he had a vision of Padmé dying in childbirth.
- 4.158 Script revision dated August 23, 2004, for the reshoot the following day, where Padmé declares that she would like to have their baby on Naboo. This is an additional scene, set before Anakin has his nightmare about losing her, and reflects the love they have for each other—a rare moment of genuine happiness for the couple.





June 30, 2003

Colin Fletcher / First Assistant Director The mood of a set is always set by the director. George is so calm and knows what he's doing. It makes for a quiet set. Everyone gets on with it. It's a nice environment to work in. It's great for actors as well, to come on a set where there's no tension. That all comes from the director. And the speed of the set is also dictated by him—we have to keep up as best we can.

Shooting began on June 30, 2003. Breakfast for 140 was served before crew call at 7:00 a.m. on Stage 2. The first scenes to be shot were set in the hallway of the Separatist cruiser with the elevator doors at one end. In scene 58, Obi-Wan and Anakin order Artoo-Detoo to stay with the ship in the hangar. In scene 23, the Jedi emerge from elevator at the General's quarters. Obi-Wan feels the presence of Count Dooku and warns Anakin. "Careful, the jaws of the trap are about to snap shut." Lunch was served for 681 cast and crew working on and off set. Lucas completed 48 setups by camera wrap at 7:10 p.m.

John Knoll The shoot for this show was remarkably similar to the shoot for Episode II; in that we were shooting in the same studio, with the same crew. Very quickly, we fell right back into the work rhythms we'd established in the last show.

Samantha Smith / Third Assistant Director The actors arrive on set and do a rehearsal. George has a clear idea of what he

wants and where the actors will stand, so we'll set the shot for focus and lighting with the stand-ins. Then the actors will step in. We'll do maybe one rehearsal with them, and then Colin will call out, "Final check," for wardrobe and makeup to make sure the actors are all right for the take. Then Colin will yell out that we're rolling, and he'll say, "Bell up," which means for me to ring the bell and make sure that everybody stands still, is quiet, and knows that we're about to roll. Then he'll roll up, and then George calls his action. When we've cut, we'll ring two bells. That let's people know that they can get busy and working on whatever they're doing.

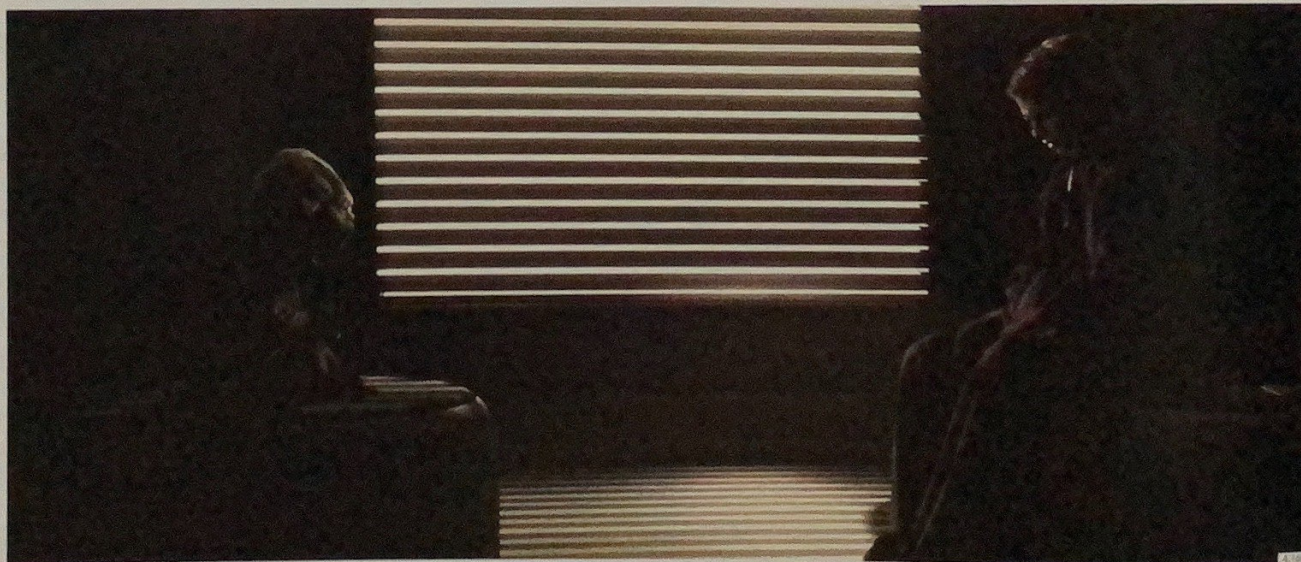
George Lucas In Episode III, not much was new, but it was more. It was completely shot digitally. We used lots of digital sets, where before we only had a few, we had huge numbers of digital characters, where before we just had a few. Now, we're able to intermingle them more seamlessly, so it was taking the technology we developed on *The Phantom Menace* and *Attack of the Clones*, using it to tell the story, and then having the story be bigger.

John Knoll On Episode II, we used the first-generation Sony CineAlta cameras, which worked well, but we had to be careful of an overexposure characteristic. David Tattersall had worked with the cameras before we got into principal photography and tailored his shooting style a bit. We got good images, but it was because we had a good DP shooting them. When we went to III, almost every aspect of the HD experience improved considerably.

The production had four Sony HDC-F950 HDCAMs with Fujinon E Series digital cinema-style lenses, recording to Sony SRW-5000 4:4:4 HD recorders, all of which could be moved from stage to stage in 15 to 20 minutes.

George Lucas The cameras have autofocus now, the lenses are better. A lot of the wires have been condensed down into one wire instead of many wires. Small changes, but it makes a difference.

Mike Blanchard There was a fiber connection from the cameras to the video village, so we could record directly onto HDCAM SR



"If you wanted a subtitle for these movies, it could be 'Fathers and Sons.' And while Palpatine isn't, we must assume, Anakin's natural father in this film he's certainly a father figure for him."

—Ian McDiarmid

4.189-190 Anakin consults Yoda on the meaning of his dream. As a Jedi he is not allowed to marry or have children so he talks more generically about having premonitions of "pain, suffering, death." This scene is set in darkness, a concept that visually opposes what we know about the Jedi Order, in that they are perceived to be a force for good.

4.161-162 After Anakin has visited the Jedi Temple he goes to the Senate Office Building to meet with Palpatine, who appoints him to be his personal representative on the Jedi Council. This sequence, set in the daytime, is brightly lit, another visual conflict in a scene where Palpatine begins manipulating Anakin in earnest. The Yoda and Palpatine scenes follow one another reflecting the conflicting emotions within Anakin since he has to choose between selfless duty and selfish love.

studio decks. Those decks have a 4.4/4 sampling rate, which is a big improvement over what we had for Episode II and part of the reason Episode III looks so stunning.

John Knoll 3-D matchmove supervisor Jason Snell is getting measurements of camera positions and set measurements.

Rob Coleman/Animation Director George Lucas is like no other filmmaker I've ever worked with. He thinks of the first unit shoot as the place where he captures his elements. Most directors set up a master shot, the wide shot of a scene, and start there and go into coverage, and so does George. But George goes one further. He goes back to what he's called the control take, and the control take is the set without any actors. This will give him a clean plate of that set environment, which may only be standing here for one day of actual shooting. Later on, he will be able to shoot his actors in front of blue screen, and ILM will composite the actors into the clean plate. George will not have to come back and have the expense of building that set again, because he's got it digitally.

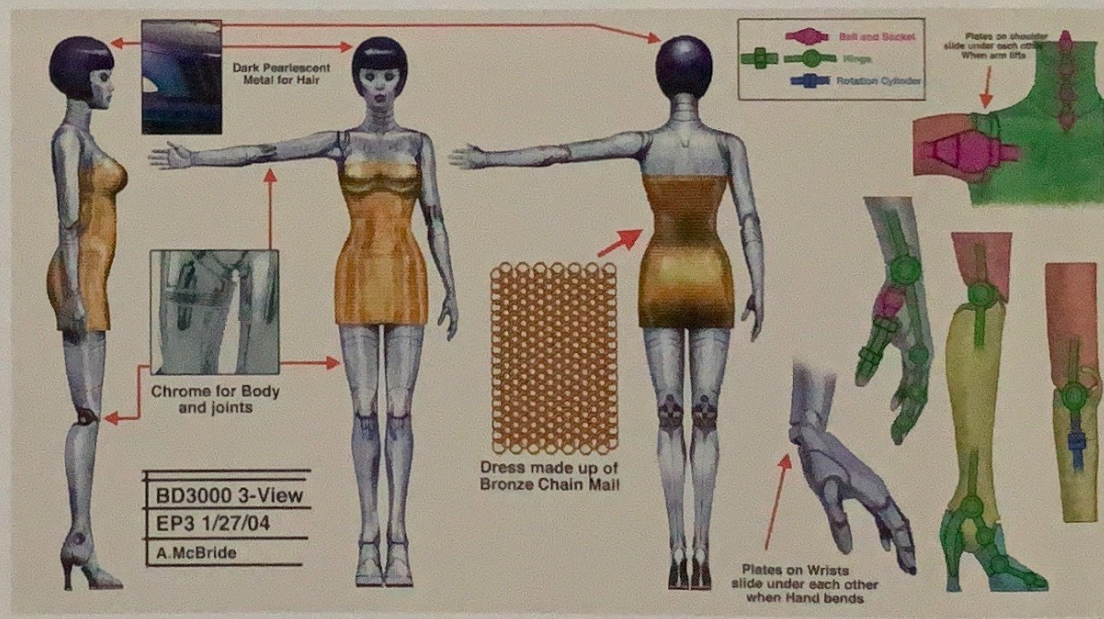
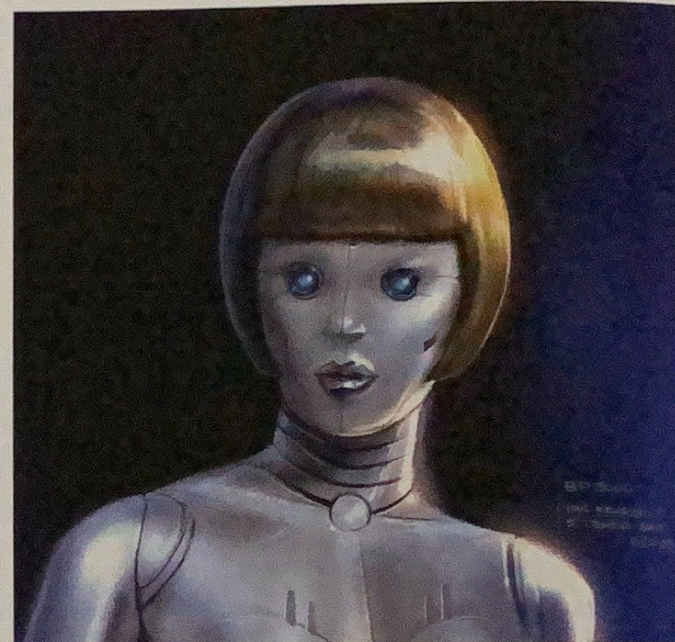
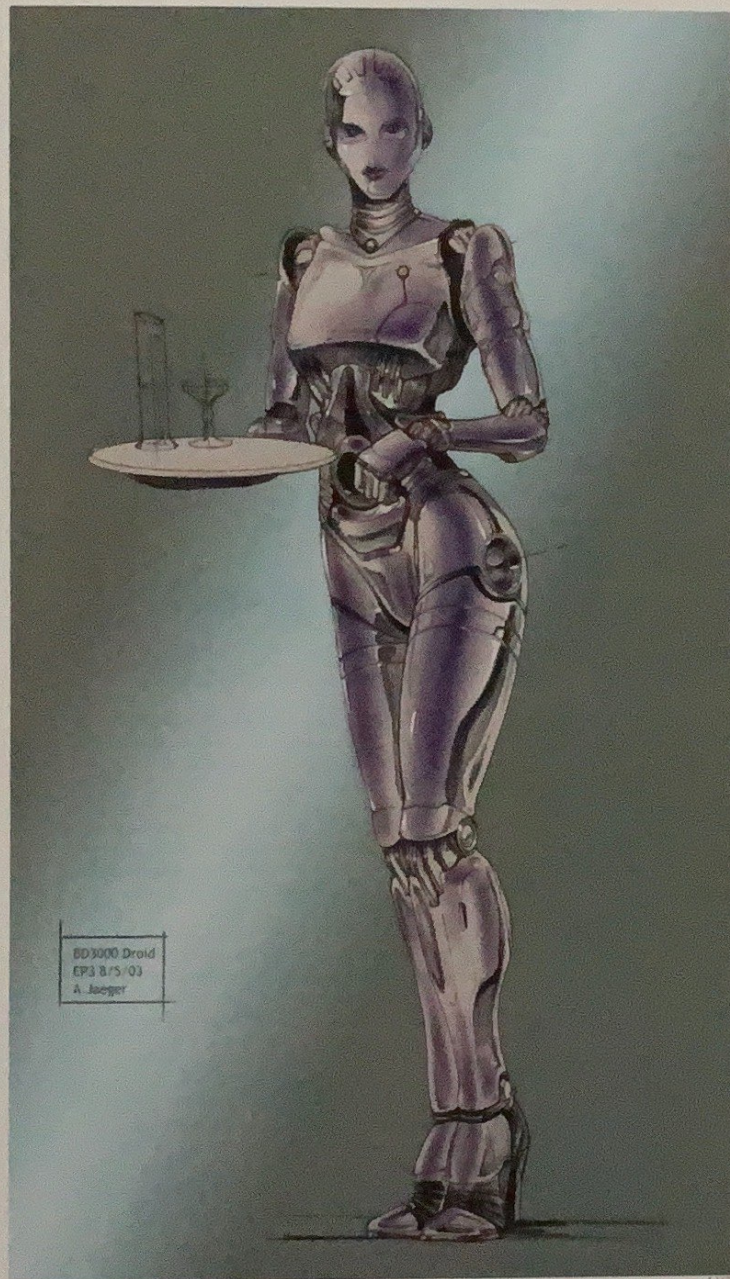


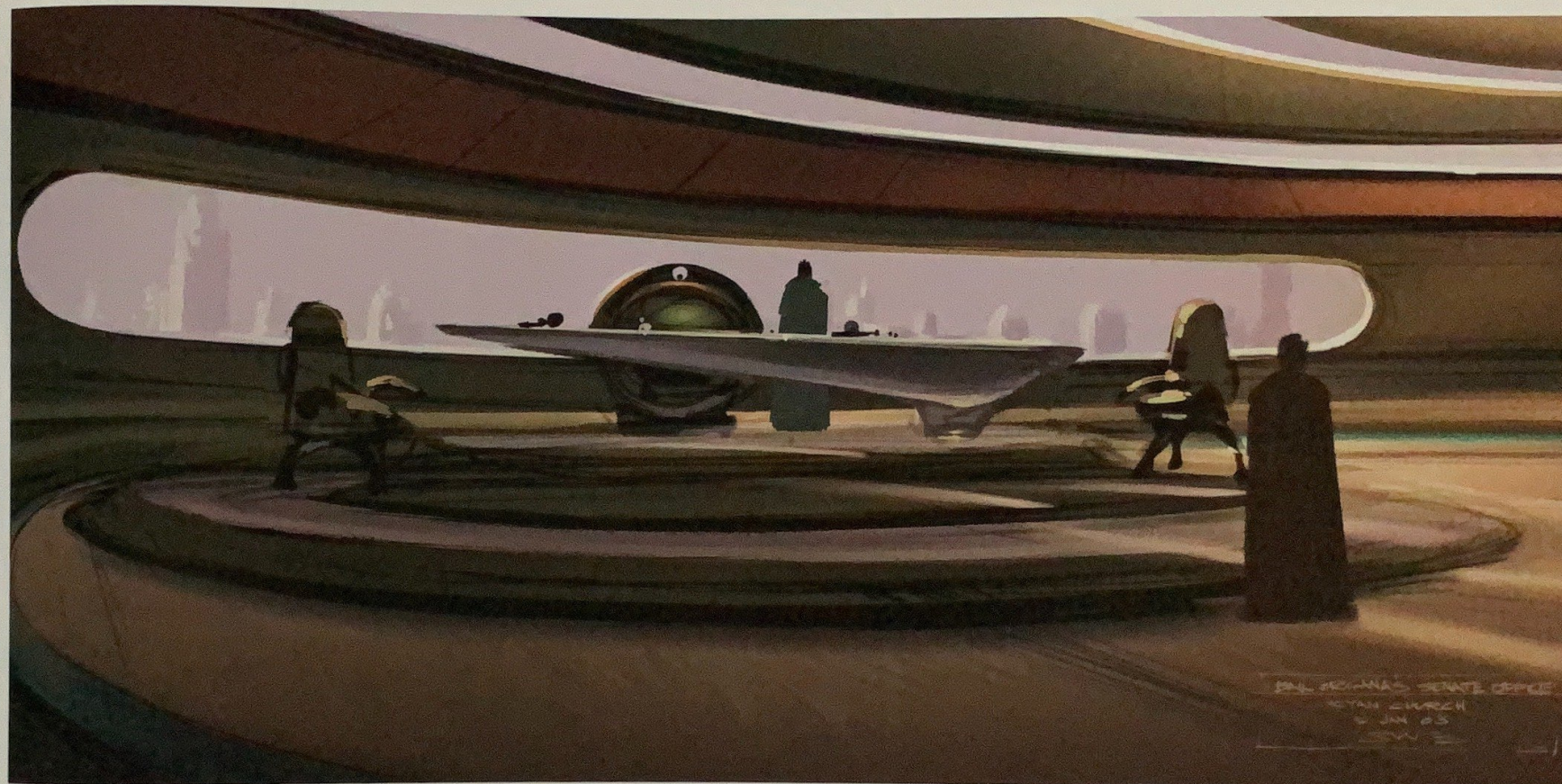
On July 2, the unit moved to the interior of Padmé's apartment on Stage 1, to shoot scene 69, where Obi-Wan visits Padmé to express his concern for Anakin and to ask for Padmé's help since he knows that they have feelings for each other. Scene 71 shows Padmé, Mon Mothma, Bail Organa, and other senators discussing the Chancellor's subversion of the constitution, and how they are to challenge this with the "petition of the two thousand." Later, in scene 75, Anakin tells Padmé, "I feel...lost. I'm not the Jedi I should be. I want more but I know I shouldn't."

George Lucas There's a bit more soap opera on this one than there has been in the past, so setting the scenes up and staging them was more complex than it usually is. Normally, we would have rehearsals at the beginning of the film. We would read through and then rehearse certain scenes that were tricky. Then we would work out the staging on the set as we were shooting each day, and do the rehearsal as we shot it.

This one, because there was a lot more complex staging, I would take the week's work and on the previous Saturday I would spend all day rehearsing with the actors and the cameraman, and we would stage the scene and rehearse it a couple times. So for the rest of the week we would have a very clear vision of what we were doing, and we didn't have to spend time on the set trying to figure things out.

The unit moved back to Stage 2 on July 4 to shoot scene 66 on Padmé's Veranda, where Padmé and Anakin argue about politics.





4.163 Alex Jaeger's concept for the BD-3000 droid (August 5, 2003).

4.164 Erik Tiemens's concept for the BD-3000 (August 4, 2003). The initial intention was that the droid be an attendant to Bail Organa in his office.

4.165 As per Lucas's request, Tiemens modified the BD-3000 to look more like Bettie Page (August 20, 2003).

4.166 Great attention was given to the mechanics of the droid's operation as can be seen in Aaron McBride's orthographic view (January 27, 2004). Color codes were assigned to the respective joints: ball and socket, hinge, and rotation cylinder. While the scene in Bail Organa's office was cut from the film the BD-3000 can be seen briefly at the Galactic Opera House and on the Senate landing platform.

4.167 Ryan Church's concept art for Bail Organa's office in the Senate building (January 16, 2003). It bears a resemblance to Palpatine's office and looks over the Coruscant cityscape.

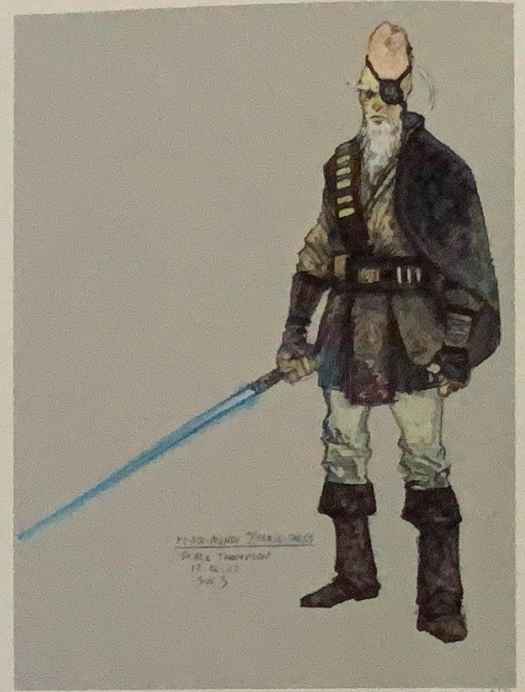
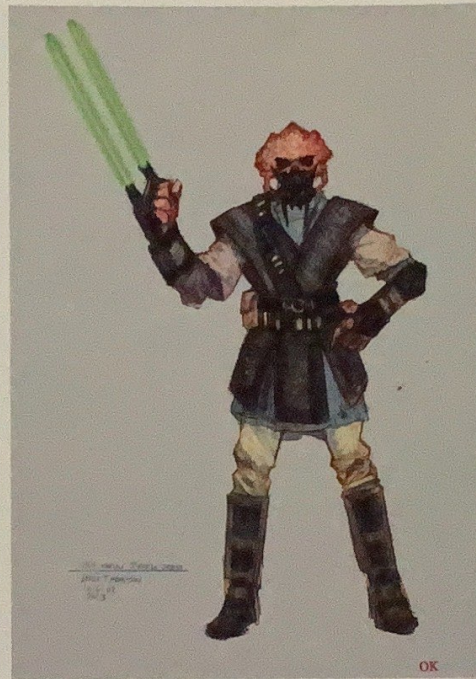
4.168 Tiemens's concept for a meeting in Bail Organa's office (June 13, 2003). Lucas wrote a scene in which various senators, including Padmé, Mon Mothma, Fang Zar, Teri Taneel, and Giddean Danu, meet in secret to discuss the Chancellor's increasing power and the ineffectiveness of the Senate. Bail and Mon Mothma have set up an organization to try to prevent Palpatine becoming a dictator. All those present realize that this is a very dangerous proposal. The scene was filmed on July 30, 2003, but was later deleted from the final print.

(Padmé: "Have you ever considered that we may be on the wrong side?") but eventually allow their love for each other to defer any serious differences that they might have.

Paul Duncan Right from the beginning of their relationship Padmé and Anakin argued about how to negotiate political problems. Padmé wants to explore all diplomatic avenues, while Anakin, despite being a Jedi, is often keen to pursue more "aggressive" solutions. You set up that dilemma in Episode I: the Jedi go to negotiate a peace with the Neimoidians but a war starts, then Padmé asks the Senate for help, but they will not give it; so the Naboo join with the Gungans to get their planet back.

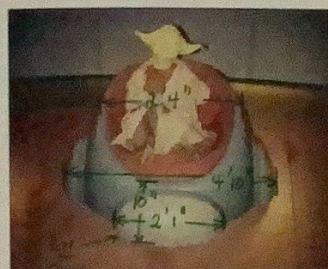
George Lucas People are upset by the fact that the whole series started out with a blockade over a trade dispute. Well, that's how wars start. That's how they lost the Republic. The whole Republic went under because the bad guys took advantage of the fact that the Senate couldn't come together about what





"I wanted to try at least one Wookiee Jedi on the off chance that George would go for it. He didn't go for it."

Derek Thompson / Concept Artist



Jedi Council 1

- 4.169 Additional Jedi designs were needed to fight the Clone Wars and for the Jedi Council. Derek Thompson suggested a Wookiee Jedi (December 6, 2002).
- 4.170 Concept for Jedi Master Plo Koon in battle dress and wielding a two-pronged lightsaber by Derek Thompson (December 6, 2002). Lucas has stamped it "OK" for the costume but not for the lightsaber.
- 4.171 Derek Thompson's artwork for Ki-Adi-Mundi in battle dress (December 6, 2002).
- 4.172 Various Jedi concepts by Derek Thompson (December 6, 2002).
- 4.173 Polaroid of Yoda's Jedi Council seat. The precise dimensions have been recorded so that Yoda's chair and his placement in the scene can be replicated digitally.
- 4.174-175 Anakin takes his place at the Jedi Council as a personal representative of Chancellor Palpatine but is insulted that the Council refuses to promote him to Jedi Master. He is later asked by Obi-Wan to spy on Palpatine, a conflict of interest for Anakin given that he is Palpatine's representative. His loyalties to his two mentors, Obi-Wan and Palpatine, are being tested.



they were going to do, it was encouraged by the commerce guilds, which wanted to make money. That's all they wanted to do, make money.

Paul Duncan There's a cut line from Episode II where Padmé tells Daaku that businessmen are becoming the government.

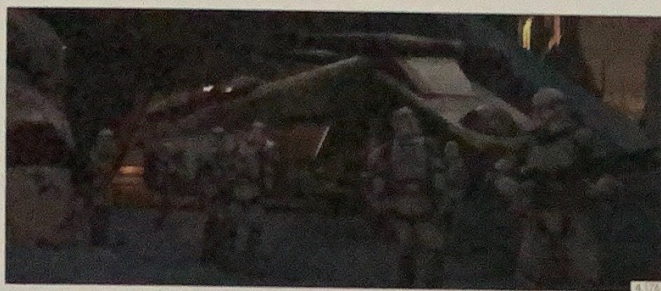
George Lucas Yeah. That's how a democracy dies. It's true.

Paul Duncan Padmé tries democratic means to curb Palpatine's power, but they fail, and she realizes that democracy is not going to work.

George Lucas That's when Mon Mothma, Bail Organa, and Padmé started the Rebellion. That's usually the way it works. You have the peasants who are rebelling around the galaxy but getting wiped out, and then the intellectuals and people in power organize a serious Rebellion. Padmé's a key player, but Mon Mothma is the one who's leading it. Of course, Padmé doesn't get to take part in the Rebellion because she goes into childbirth and dies.

Paul Duncan It's implied that she lost heart.

George Lucas Yes. Her soul has been crushed. The thing that breaks Padmé's heart in the end is that Anakin says to her, "Come and join me. I have all the power now. I can rule the universe and you can do it with me." So the idea of saving her life has become a minor issue. And that's when she says, "Wait a minute. This is not what I want, and you're not the guy I fell in love with!"



The Rule of Two

George Lucas There was never a war between the Jedi and the Sith Lords. The Sith Lords were in control for a long time. And what happens when you have a world full of Sith Lords? They start killing each other to see who's going to be the top Sith Lord. They don't vote; they just kill. It's like a medieval feudal system.

There may have been thousands or millions of them and eventually, after 100 or 150 years, they killed everyone except for two. And the more powerful of the two decided, "You're my apprentice. I'm your master. I will pass on my knowledge to you to keep the dark side of the Force alive." But he would keep a close eye on his apprentice.

But the arrangement never worked because the apprentice was constantly trying to recruit another person so that the two of them together could be more powerful than their master — they could kill him and take over. Likewise, the master is also looking for another apprentice, so that he can keep the first apprentice in line. The rule of two ensures that if there's more than two, they'll kill each other until there are two left.



Then the Republic came to power and the Jedi brought peace to the galaxy by being ambassadors and troubleshooters. So when the Senate decides to do something, or the Jedi Council discover something that's amiss, the Jedi fix it. The Jedi don't like to fight or kill people. They're monk-warriors. They're monks first, and they try to convince people to get along. And if you don't comply, your hand comes off. They use their power to keep the governments of all the planets in line, so that they don't do terrible things.

Paul Duncan And they have the moral authority for that?

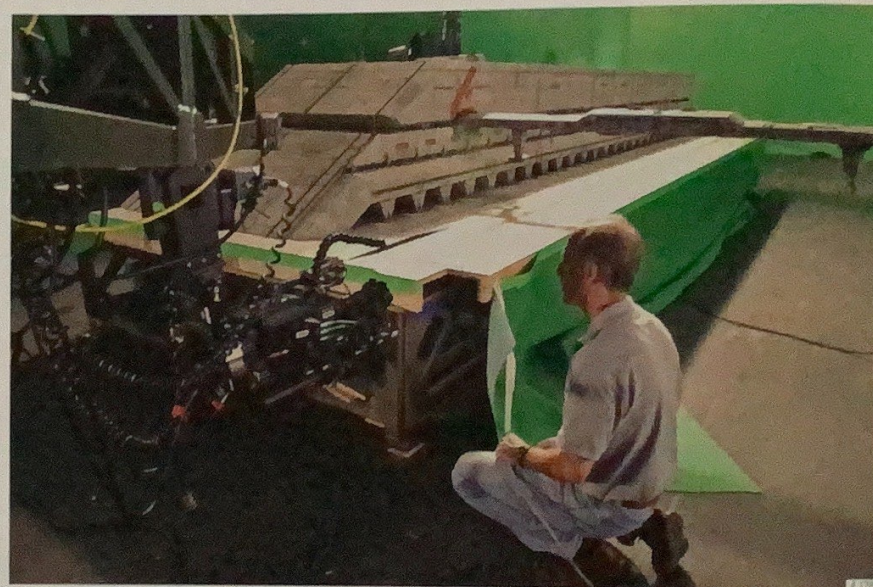
George Lucas Yeah. They are the most moral of anybody in the galaxy. They're monks.

The Sith practice the dark side and are way out of balance. The Jedi aren't as much out of balance because they're the light side of the Force. They still have the bad side of the Force in them, but they keep it in check. It's always there, so it can always erupt if you let your guard down.

The Emperor snookered the Jedi with Order 66. The nascent Rebellion and the Jedi didn't move fast enough.

Paul Duncan They're fallible.

George Lucas They're not super people.



Paul Duncan They've been as manipulated and outplayed as everybody else. Darth Sidious had ordered the clone army pre-Episode I, so it feels like they lost from the beginning.

George Lucas Nobody knows who ordered the clones. It's played as if it were somebody from the Jedi Council who foresaw there was going to be a war, so he was preparing for it, but it turns out that was somebody working for Palpatine, Sifo-Dyas. He was the apprentice before Darth Maul.

Paul Duncan And then Count Dooku took over from Maul.

George Lucas With Count Dooku I set up the idea that some of the Sith Lords were fallen Jedi who went to the dark side. The Emperor picked them up and trained them in the dark side, but they were already trained to use the Force as Jedi.

Palpatine told Dooku, "I have somebody who I think will become a great Sith Lord and I think we can get him to join us, but we need to test him. So we're going to set up a situation where you fight him. If he gets the best of you, then I'll stop the

4.176 Final frame of the gunship landing as Yoda prepares to go with clone troopers to Kashyyyk to help the Wookiees fight the Separatists.

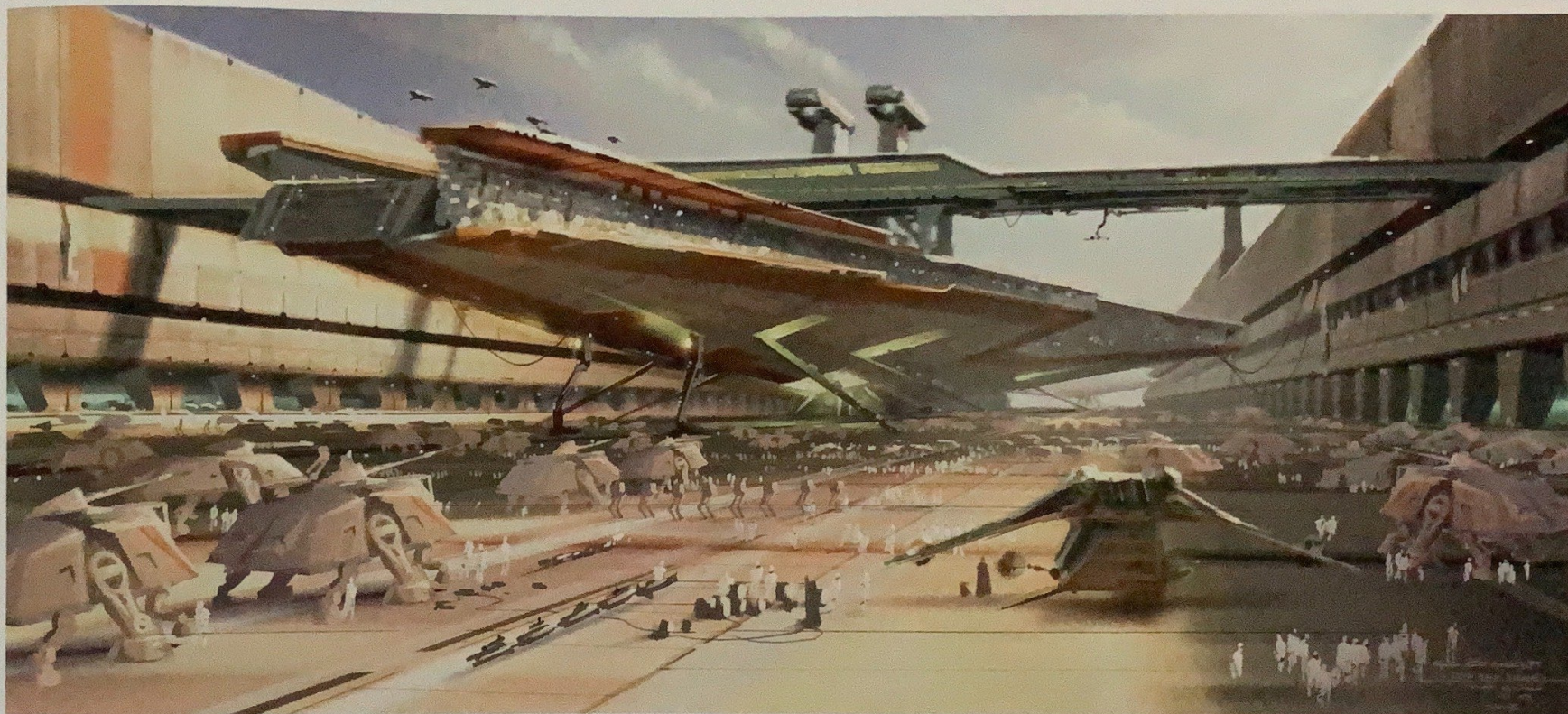
4.177 Ryan Church's concept art for shot CCL 10R showing the clone landing platform on Coruscant.

4.178 David Owen inspects the miniature of the Coruscant clone landing platform. Even though the film was shot digitally and most of the postproduction generated in a digital environment, models and miniatures were still used where it was considered to be more efficient and cost-effective to do so. In this case, the miniature was used for two scenes.

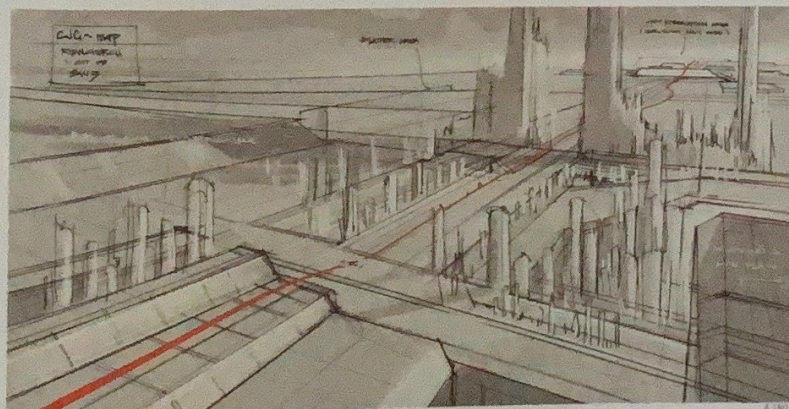
4.179 Ryan Church's art for shot CJC 280 showing the landing of the Star Destroyer as the clone landing platform (December 11, 2003).

4.180 Church's schematic for the Clone Jedi Gunship (CJG) sequence showing the flight route through Coruscant to the Jedi embarkation area marked up as the "Coruscant Navy Base" (October 1, 2003).

4.181 Final frame of the gunship's flight through Coruscant. The lighting gives an uneasy feeling to the scene as Yoda, Mace Windu, and Obi-Wan discuss Anakin's loyalty.



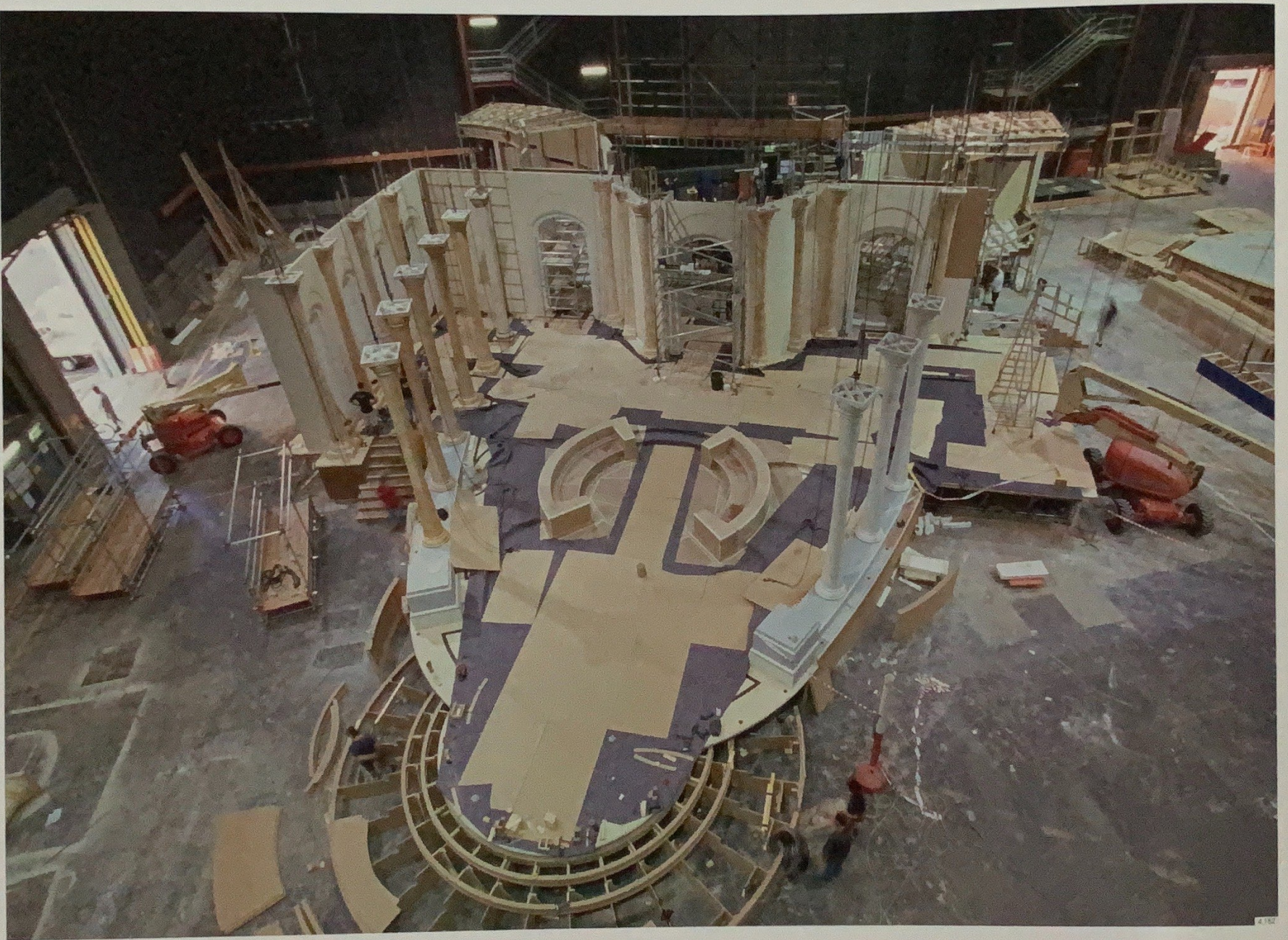
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4.180



4.181



“What if the democracy we thought we were serving no longer exists and the Republic has become the very evil we have been fighting to destroy?”

Padmé Amidala

“I don’t believe that. You’re sounding like a Separatist.”

Anakin Skywalker

4.182 Set construction of Padmé’s apartment and veranda on Stage 2 of Fox Studios in Sydney, Australia.

4.183 Final frame of Anakin’s return to Padmé’s apartment. They sit together and Anakin puts his hand on his wife’s belly to feel the baby. Amidst their personal happiness they also discuss their growing concerns about the Jedi Order and the nature of democracy within the Republic.

4.184 Padmé: “Hold me... like you did by the lake on Naboo, so long ago... when there was nothing but our love... No politics, no plotting... no war.” Padmé’s speech is ironic since they see the world differently, and they expressed these differences on Naboo.

fight and he’ll have passed the test. If you get the best of him, then we’ll let him go, and we’ll let him stew a few more years until he’s ready.” But behind it, obviously, is Palpatine’s real intention. If Anakin is good enough, Anakin can kill Dooku and become Palpatine’s apprentice. But he didn’t tell Dooku that.

I have to say one thing for Palpatine. He goes through apprentices pretty quickly. That’s why he wants Anakin. Because it’s hard to get help and this Anakin kid is going to be good.

Paul Duncan He’s a keeper.

George Lucas He’s better than all these other ones. He thought, “I’ll put him up against Dooku and see who wins,” and Anakin won.

The rule of two is referred to in all the movies — Darth Vader wanted Luke to join him in Episode V: “Come with me, my son, and we’ll rule the galaxy together.” Every time you come across a Dark Lord, he always wants somebody else to be there with him so that they could take over. It’s the same when the Emperor is trying to get Luke to kill his father in Episode VI because he thinks Luke’s stronger than his father.



In Episode III Anakin becomes a Sith, becomes Darth Vader, when he kills Mace. Even at the end, he says to Padmé, “I can be more powerful than the Emperor,” and he wants her to join him, but she refuses.

That’s greed. Greed means that you’re either afraid you’re not going to get what you want, or you’re afraid that, when you get it, somebody’s going to take it away from you. It’s all fear driven. You’ve got to not be greedy. It puts you in a bad place, and then you’re unhappy.

So, philosophically speaking, that’s how the whole thing fits together, and that’s what drives all the stories.

Scene 99

Ian McDiarmid I got the script for Episode III, like everybody else, a few days before we were ready to shoot, and I was knocked out by the fact that George concentrated so much on the relationship between Anakin and Palpatine to the extent there were these enormous dialogue scenes. Which is great, but daunting.

At 10:00 a.m. on Saturday, July 12, George Lucas met with actors Hayden Christensen, Ian McDiarmid, and Samuel L. Jackson, as well as David Tattersall, script supervisor, Jayne-Ann Tenggren, dialogue coach Christopher Neil, and Samantha Smith, on Palpatine’s Office set on Stage 7 to rehearse and block scene 99, where Mace Windu tries to arrest Palpatine but the Chancellor



4.185



4.188



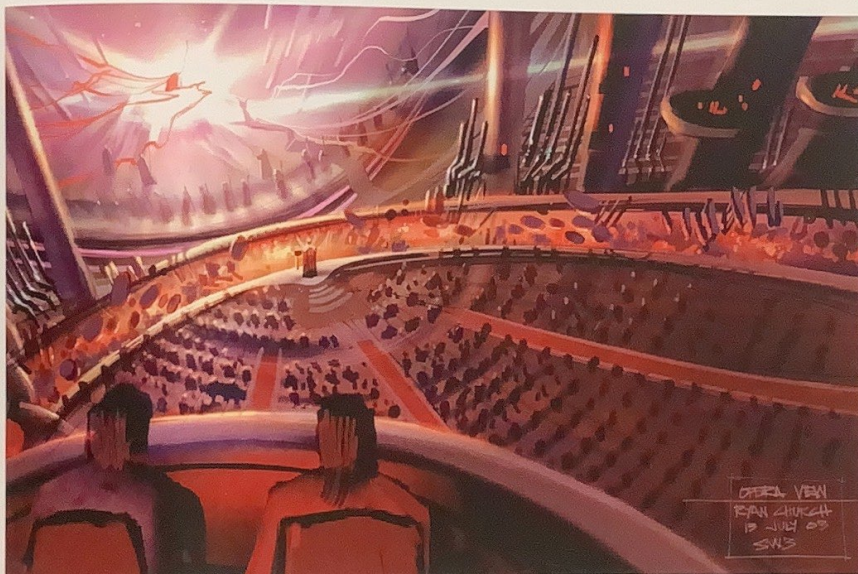
4.186



4.187

"I began to realize, if Vader is the great dark icon of our times, I'm blacker than him. I'm the blackest of the black."

Ian McDiarmid



4.185 Ryan Church's concept art for the exterior of the Galactic Opera House on Coruscant (March 29, 2004).

4.186 Concept for the opera house grand entrance by Church (October 29, 2003).

4.187 Final frame of Senator Chi Eekway (Katie Lucas), Baron Papanoida (George Lucas), and Senator Torr Taneel (Ananda Lucas, center) in the corridor outside the main auditorium.

4.188 Costume supervisor Gillian Libbert prepares George Lucas (right) and his daughter Katie (left) for their cameos at the opera house.

4.189 Palpatine tells Anakin the story of Darth Plagueis the Wise who "could keep the people he cared about from dying." This is the final trigger for Anakin's seduction to the dark side.

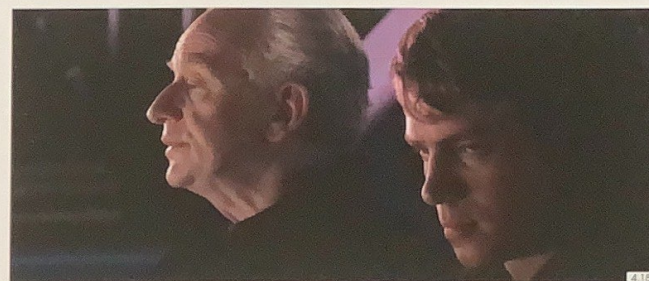
4.190 Church's concept for the opera house interior includes the view of the opera stage from Palpatine's private box (July 15, 2003). This design follows a conventional theater configuration of the audience looking upon a stage at the rear of the theater. The final design had the opera stage located in the center of the auditorium with audience seating surrounding it to give a more immersive 360-degree experience.

4.191 Anakin (right) arrives at Palpatine's box while the opera performance is underway, so the Chancellor (center, right) dismisses his aides so that he can speak with Anakin privately.

fights back. At 10:30 a.m. Jackson left and the remainder continued with scene 67, where Palpatine tells Anakin about General Grievous in Utapau, sows dissent against the Jedi Council, and recounts the story of Darth Plagueis the wise.

George Lucas I said, "My God, this is a four-page scene—I've had five scenes in Palpatine's Office already!" So I moved it to an opera house, playing a ballet, *Squid Lake*, which worked out great.

Since scene 67 required a new set to be prepared, it was moved back in the schedule to the end of the week. The rehearsal continued on scene 94 (in the hallway between the Chancellor's main office and anteroom. Palpatine reveals to Anakin that he is a Sith Lord) and scene 89 (in the main office, where Palpatine implies that Padmé is hiding something from Anakin) until 1:00 p.m. As a result of the rehearsal, script changes to scenes 67, 94, and 99 were delivered on July 14.



Scene 94 was shot on July 14. The following day scene 89 was completed and work began on scene 99, where Mace Windu enters the anteroom with three other Jedi. Anakin is with the Chancellor (this continues from scene 94), so Palpatine Force-moves Anakin's lightsaber to his hand and lunges at the Jedi; all but Mace are killed. The scene continued filming on July 16.

Gavin Bocquet It's quite a fluid process. Originally, the fight started and ended in the main room. As George saw the space evolve, he and Nick saw that the fight might be better moved into those environments.

Rob Coleman The fight between Sidious and Mace Windu is a cool fight—it starts in Sidious's anteroom, goes down a long hallway, and into the big room.

Ian McDiarmid I imagined that the Emperor, when he achieved his horrible apotheosis, would only have the electric lightning emanating from his fingers, because that's what he had in *Return of the Jedi*. But no, he has other skills. When I read this script he seemed to have turned into action man.

George Lucas You're always using stunt doubles for action set pieces. It's just a matter of whether you use them more or less. For the older actors, Christopher Lee, Ian, and Yoda, it's more difficult for them to do the highly physical types of work, so you use a combination of stuntmen and the actors to create the sword fight in a way that is realistic and looks good. The huge advantage we have now is that we don't have to hide the stunt

double's face the way we used to; we can put digital faces on the stuntmen, and we can film closer to them.

Nick Gillard I was lucky enough to get Kyle Rowling again to double Count Dooku, he doubled Dooku on *Attack of the Clones*, and he brought a friend of his along, Michael Byrne, to double Palpatine.

Rick McCallum It was always our idea to use stunt doubles to do the majority of the work but George was reluctant to do that. He wanted to be close-up. He wanted to be right on Sam's face and on Ian's face. It's a fight of close-ups, a fight of the two of them sensing who has the greater strength.

George Lucas The fight has to be changed. You can't change Ian. You've got to change the fight.

Rick McCallum So on the day Ian and Sam had to learn everything. It was a testament to Nick and his ability to think on his feet and to solve the problem. We got the film back on track after 30 minutes of discussing what we needed to do.

Palpatine lunges at Mace Windu and forces him back through the hallway to the main office. During the swordplay, Mace shatters the window and disarms Palpatine.

Samuel L. Jackson I had to learn, I think, 97 moves in two to three days, and then learn to speed them up over that period. It's an elaborate sword dance; more so than a fight because your feet have to be coordinated to back up, back up, stop, turn, twist, move, jump, run, and do all this other stuff. I had learned to move



“Kashyyyk was a combination of all sorts of things; digital stuff, background plates that we shot in Thailand and China, and water elements that we photographed in San Francisco. It was like a giant jigsaw puzzle. You put it all together and Kashyyyk comes out the other end.”

Roger Guyett / Visual Effects Supervisor

4.192 Ryan Church's concept for the forested Wookiee planet Kashyyyk (November 12, 2003). In the foreground can be seen the Wookiee arnithopters and calamarans skimming over the lagoon.



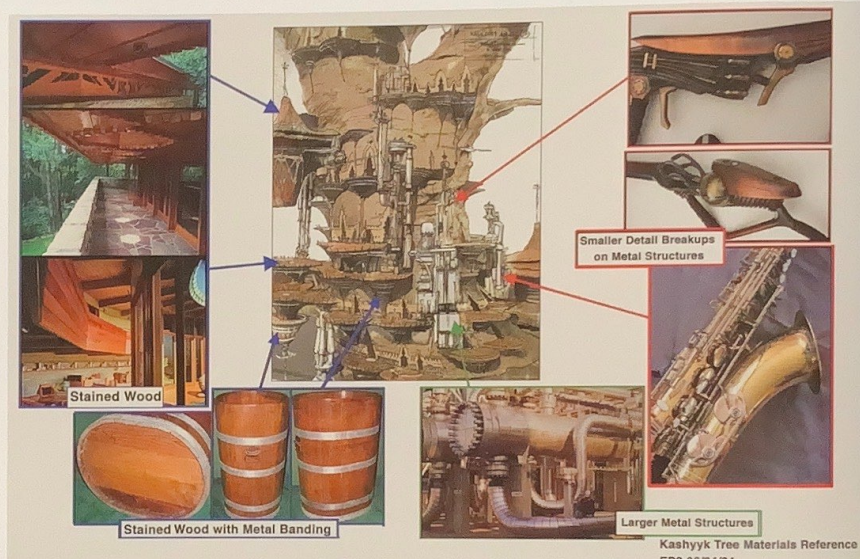


"I imagined that the Wookiees would be like Frank Lloyd Wright—master craftsmen—and that their architecture would be brushed aluminum integrated into wood, similar to what you'd find in the interior of a nice luxury car. Their style of architecture isn't old or new. It's all its own thing. It's very pure."

Ryan Church



4.193



4.194

- 4.193 Concept art for the Wookiee tree by Church (April 6, 2004). It is titled "Final Kashyyyk Tree" and shows the command center located just above the tree's main branch looking out over the water.
- 4.194 Materials reference sheet for the Kashyyyk tree by Aaron McBride (June 4, 2004). Photographs surrounding the concept artwork show the proposed materials to be used for specific elements of the tree. These combine organic materials as well as metallic structures.
- 4.195 It took 13 weeks to construct and detail the 12-foot model of the Kashyyyk tree.





4.196

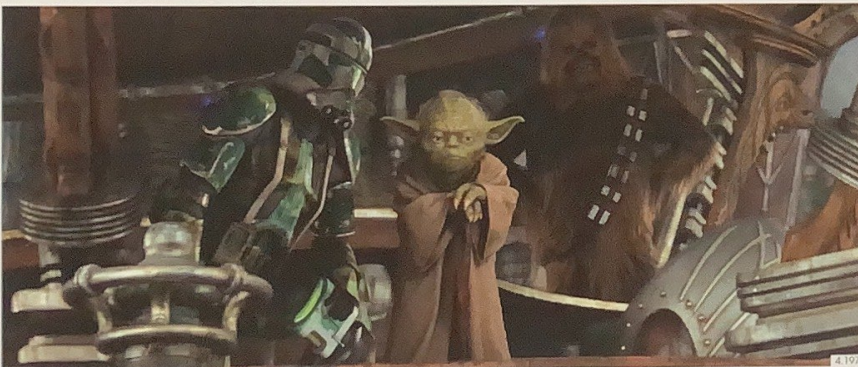
at a specific speed with Michael Byrne, then we had to incorporate Ian into that sequence, and Ian didn't have that speed and dexterity yet because he wasn't expecting to do the fight.

Rob Coleman It was evident that Ian could stand and move his hand—Sidious holds his lightsaber in one hand—but moving around the room was not his strong suit. So they changed the schedule a little bit and gave Ian a little bit more time to practice. A day after, Ian came back and could do a lot more. So Nick obviously had spent some real quality time with him, and I'm confident it will be fine.

Filming on the scene continued on July 17. Palpatine is at the mercy of Windu's lightsaber so he attacks with Force lightning, which Windu reflects back, causing Darth Sidious's face to become disfigured. This meant McDiarmid had to don the "mask of evil" as it is referred to in the script.

Ian McDiarmid For the best part of 30 years I've been switching between two different makeups on a regular basis. These make-up guys are getting good at it now, and they've got it down to an hour and three quarters. Now I think they could probably do it in their sleep. They certainly do it in mine.

Paul Duncan When Windu has Sidious at his mercy, and decides to kill him—the Chancellor has the Senate and the law courts in his pocket so will never face justice—it is set up as exactly the same dynamic as with Dooku on the starship. Yet this time, Anakin decides to save the captive.



4.197

"George was very specific about the look of the opening shot of Kashyyyk. He wanted it overcast, but he did not want it to be so dark that we couldn't see everything. He wanted it shrouded in mist, with the sun burning through the clouds. The background mist was part of the digimatte cyclorama, and then we added CG mist elements to create density in the foreground."

Patrick Tubach / Digital Compositing Supervisor



4.198

George Lucas Anakin's rationalization is "Everybody is after power. Even the Jedi are after power. Therefore, they're all equally corrupt now. So which side am I going to be on? Do I align myself with Palpatine, who is a Sith Lord and who can possibly help me save Padmé? Or do I side with the Jedi and maybe lose Padmé?"

Paul Duncan Anakin goes to the dark side, severs Windu's hand, and Sidious forces Windu out the window to fall to his death.

Rick McCallum Sam had to jump out of a window. We were going to put him in a harness, but Nick turned to Sam and said, "You're not going to have a harness. You're a star. You're jumping out that window and you're going to jump onto a stunt mat and that's the way we're going to do it." And Sam said, "Okay, I like that. Fantastic." And that's all they did all afternoon. Sam kept on jumping off the balcony and jumping into the mat. They have fun with it. That's what Nick is able to do with our actors.

Samuel L. Jackson I feel pretty great about that whole fight scene. I've been waiting for a scene like that my entire life, ever

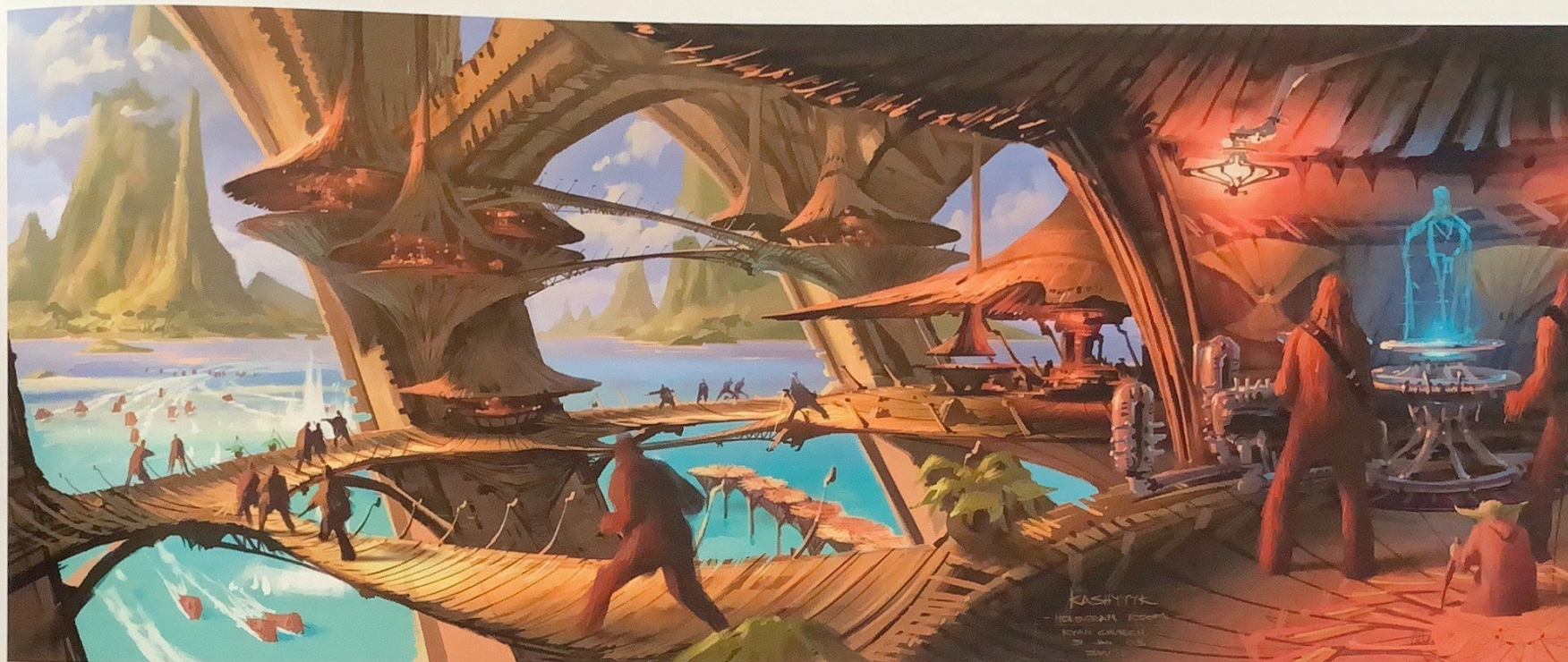
since I was a young man pretending to be an Errol Flynn-like swashbuckler, fighting with sticks. It's amazing!

A Solid Block of Evil

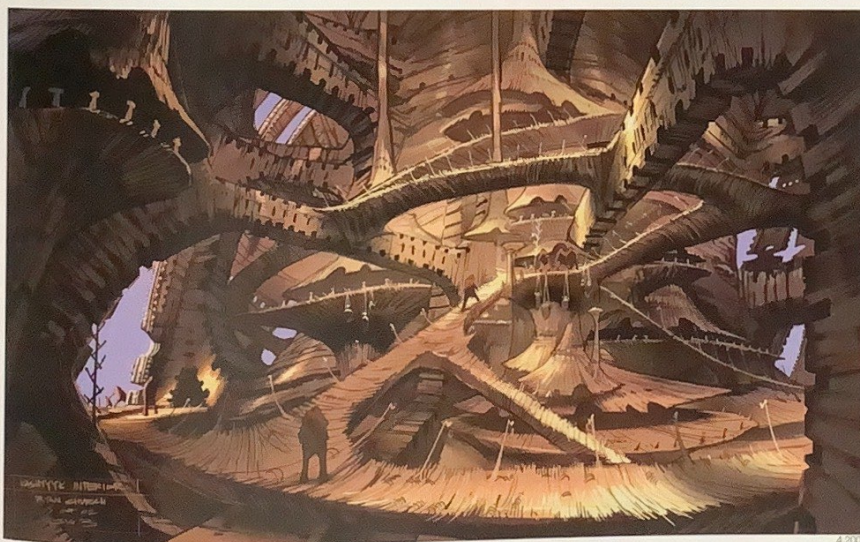
Ian McDiarmid The great thing in playing Palpatine, is that it's clear in Episodes I and II that he's a hypocritical politician, so that's what you play. And then there is this dark person in a black robe who crops up. He's a solid block of evil. No redeeming features. Except one: he has a scene set at the opera. He's obviously a patron of the arts.

On July 18 and 21, Lucas shot scene 67 at the opera house, where Palpatine continues his seduction of Anakin to the dark side.

Hayden Christensen Ian does such an amazing job of playing the puppet master. He pulls each string with such charming yet evil precision.



4.199



4.200

- 4.196 Concept art by Ryan Church of Wookiee ornithopters, with and without Wookiee pilots (August 22, 2002). Its design is organic and is reminiscent of a dragonfly.
- 4.197 Yoda has arrived on Kashyyyk with clone troopers to help defend the Wookiees from the droid attack.
- 4.198 Final frame showing the establishing shot of Kashyyyk, home of the Wookiees.

- 4.199 Church's concept art shows the Wookiee command center as the Separatist attack begins in the background (January 31, 2003).
- 4.200 A concept for the labyrinthine interior of the Kashyyyk tree by Church (October 2, 2002).
- 4.201 Final frame showing Chewbacca (Peter Mayhew), Yoda, and Tarful (Michael Kingma) confer with the Jedi Council via hologram to update them on the situation on Kashyyyk.



4.201



4.202 Concept art by Ryan Church for shot KJB 20 showing the Wookiees going into battle as the droid army approaches (June 25, 2004).

4.203 The shot of the Wookiees leaping through the barricade to fight the droids was directed by Rob Coleman on May 17–18, 2004.

The image is comprised of multiple takes of the same group of six actors in costume, switching positions and weapons with each new shot, to give the impression of a greater number of Wookiees.

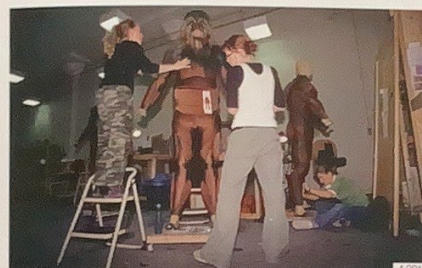
4.204 CG model of a Wookiee by Aaron Ferguson that shows the basic body structure with minimal fur. Maps were needed to ensure that all elements of the fur, such as color, length, density, jitter, and tufting could be modeled convincingly.

4.205 Final frame of the droid attack.

4.206 The actors playing the Wookiees were so tall that the crew needed stepadders to reach the topmost parts of the costume.

4.207 Church's art shows the Wookiees meeting the droids in battle on the water (August 30, 2002). The monopod droid tank was designed by Church for Episode II but was not used.





Ian McDiarmid I like Hayden very much, and he's a fine actor. You know that when you are working with somebody eyeball to eyeball over several very tightly shot scenes. He's a wonderful listener, and everything passes across his face. As Palpatine, I'm having to look very closely in those eyes and see what emotions were going on to manipulate him, and every take I would get something different from Hayden to use as raw material. It was enormously exciting to work with him. It's interesting that in the previous film not everyone understands his behavior, and his behavior isn't particularly understandable, but I think in Episode III a lot of people will look back and understand why his character behaved as he does in Episode III. He is a confused young man, to put it mildly.

Hayden Christensen Anakin's very conflicted and being pulled in different directions. Palpatine is picking up on some of his frustrations and his wants and needs.

Ian McDiarmid When you're playing a dialogue scene in which there are many beats, you can make different choices. Not ones that interfere with the continuity, but you're able, if you can find them in yourself, to offer George and the editor lots of different things.

Christopher Neil / Dialogue Coach Ian has been amazing to watch. He comes from that English stage background where he learns the lines, and he nails it every single time. And it's interesting to watch George sit back and go, "Ahhh."

Hayden Christensen He steals the show. I think so much of why this film works is from his performance. He makes choices

I don't know that I could muster the courage to make. And he pulls it off. You can see the process in his eyes. And between scenes, you see him doing that same obsessive, constant analysis of things. He doesn't go anywhere. He stays on set, pacing back and forth.

On July 29, McDiarmid shot scene 137 in the Senate, where Palpatine (as Darth Sidious) crowns himself Emperor of the First Galactic Empire. He also completed a short hologram scene for Episode V, so that he appears in five of the six movies.

Ian McDiarmid The extraordinary thing is that I was an actor in his 40s playing someone around 110, and then to go back



"You are strong and wise, Anakin. And I am very proud of you. I have trained you since you were a small boy. I have taught you everything I know, and you have become a far greater Jedi than I could ever hope to be."

Obi-Wan Kenobi



and be my own age and play the character at the age contemporaneous to mine is extraordinary. It's a very retrospective journey. I now have the benefit of hindsight and foresight. It's unique in the history of acting.

Level Nine

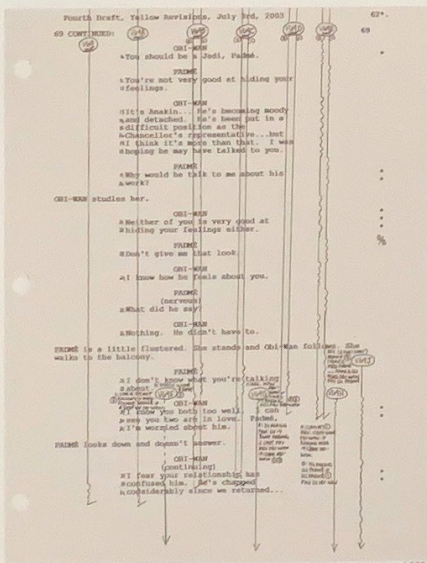
George Lucas In the dramatic scenes the actors have to understand the character and the emotional content of what's going on, and memorize the lines. For the sword fighting you have to learn hundreds of moves, and memorize them or you get hit in the head. It's a very different focus. I decided that it's better to have the actors focus on their acting for the first part of the filming, and then later on focus on their sword fighting and the action set pieces. To mix those up I think is harder for an actor to cope with.

It's also a very different way of shooting. It's tedious shooting action set pieces because it gets broken down into little pieces.

It's not like setting up and staging a scene from beginning to end, having the actors run through it like a stage play, and then covering all the different angles.

There are stunts involved. It's dangerous. It's very physical, and people wear out and get tired at the end of the day. We have one of the longest continuous sword fights that has ever been filmed, which meant we had weeks of those guys coming in at 7:00 in the morning and fighting until 7:00 at night with not very much rest. So it was very physically exhausting for them.

Nick Gillard The fighting has evolved considerably in these last three movies. George works on a system of skill levels. Yoda is a level nine. Darth Sidious is a level nine. Mace Windu is a level eight. On *Phantom Menace* Obi-Wan was level six or seven. On this film he's moved up to level eight, which affects his style of fighting. Anakin in *Attack of the Clones* was a level seven. In this film he has moved up to a level nine. He's gone past Obi-Wan, and the difference is because of the dark side. Even though Yoda is a level nine, it's controlled.





4.211

You have to go through each level to attain the next level, and if you do it too quick, you're going to get in trouble. Anakin is too young to go through the trials, so he's got to this level too soon. Anakin's downfall is going to be his aggression. Obi-Wan is also aggressive, but he has gone through all the levels, taken the time, and learned everything he needs to learn. That's going to give him an edge.

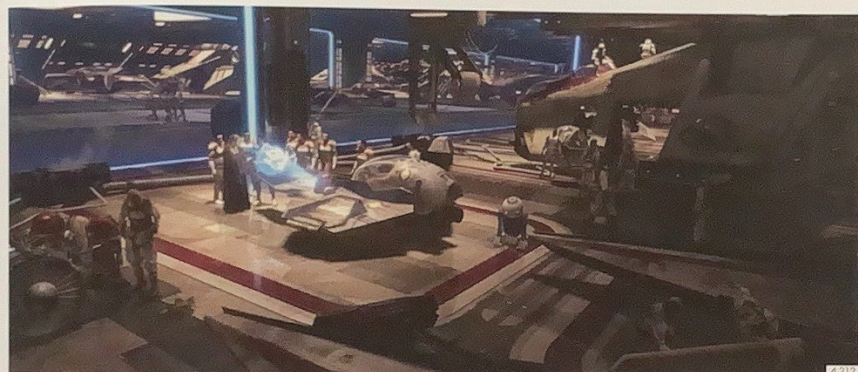
Hayden had to be much bigger on this film, so eight weeks before shooting began he came to train and work out. He'd be in the rehearsal room four hours a day sword fighting, and then spend two or three hours in the gym on a brutal exercise routine, working on specific muscle groups. They sorted out a good diet for him and he put on a huge amount of weight.

I've been working with Ewan now for six or seven years, and Hayden for three years. Both of them are phenomenal at fighting. Brilliant memories. Ewan has over 1,000 moves to learn in this film. He has the most to learn, and he had the least time because he came from another film, so he had three weeks before we started shooting. But he's managed to do it.

Obi-Wan and Anakin should mirror each other because they're master and pupil. They both come from the same line of training—Qui-Gon, Darth Tyrannus, Yoda—so they match each other perfectly. The end fight between them is incredibly long. They travel a quarter of a mile, and perform about 800 moves across five sets.

The fight begins in scene 145 on the Mustafar Landing Platform. After shooting Darth Vader's final scene with Padmé on August 6 and 7, the fight with Obi-Wan began filming on August 11. They continued on August 25 in the Conference Room, and spent the next six shooting days, up to September 2, on the epic duel. They finished the final part, in the Control Room, on September 9.

George Lucas The sword fight is very realistic; it's not sped up. Hayden and Ewan are both very good and obviously as actors there's a little bit of competitiveness about who's going to be the better sword fighter. So we got some very good performances out of them, trying to be better than the other guy.



4.212

4.208 Palpatine has supplied intelligence that General Grievous is on Utapau, so Obi-Wan departs Coruscant with some Star Destroyers to confront him. With Yoda and Obi-Wan, as well as other Jedi Masters like Ki-Adi-Mundi and Plo Koon, away from Coruscant, Palpatine is positioning himself to take control of the Republic.

4.209 Lined script, a revision dated July 3, 2003, for a scene where Obi-Wan goes to meet with Padmé at her apartment. He reveals to her that he knows she and Anakin are in love. The meeting is interrupted by a call indicating that General Grievous has been located. Obi-Wan assures the senator that he will not tell the Jedi Council about Anakin and indicates that he believes himself to be a friend to both of them. This scene did not appear in the film. Instead, Obi-Wan's meeting with Padmé took place later, after the execution of Order 66.

4.210 Final frame: Obi-Wan is leaving for Utapau in search of General Grievous. Anakin apologizes to him for being unappreciative of his training. Obi-Wan lets Anakin know how proud he is of him. This scene's purpose is to highlight that, even though they are Master and Padawan, they have a strong brotherly love for each other.

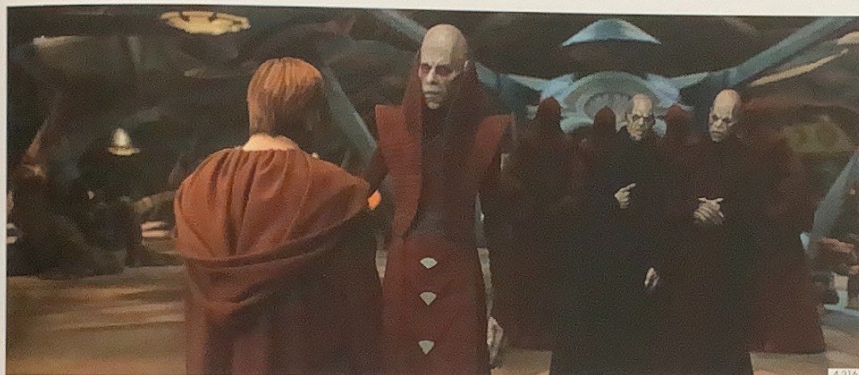
4.211-212 Obi-Wan confers with Clone Commander Cody (Temuera Morrison) on their strategy, agreeing that the Jedi Master will arrive on Utapau ahead of the clone troopers.

4.213 Ryan Church's concept for a transport hangar as starfighters depart for war has the dynamism of an aircraft carrier deck (July 5, 2002).



4.213





4.216

Hayden Christensen Ewan and I were constantly hitting each other, and I still have scarred knuckles from the reshoots, and Ewan the same. The lightsabers become a liability, and so you have to be 100 percent present at all times when you're doing the fights.

Nick Gillard We've got two good stunt doubles for Obi-Wan and Anakin, but they rarely get to work because the boys do it pretty much themselves.

The Right Shot

Rick McCallum We had two editors: Roger Barton and Ben Burt. Ben was in California while we were shooting in Sydney so he could continue to work on all the animatic sequences that still needed to be filmed. Roger was in Sydney the whole time. We were simultaneously cutting the picture while we were shooting.

Roger Barton / Editor George said, "Don't expect to see a lot of me while we're filming," and he's held true to that. His parting words to me were "Go ahead and cut your own Star Wars movie," and that's what I'm doing.

When George shoots something in the morning, generally I'm working on it that afternoon. When I think a scene is complete, I'll piece it together as best I can with what footage I have. The advantage to having me here is in the very few cases where I feel like we're missing a beat that would enhance a scene. I communicate that to George, and he can decide whether or not he wants to shoot it here, or pick it up in a reshoot.

Ben is working at the Ranch doing animatics of the big action set pieces, so when there is live-action footage for the space battle, or for the Utapau fight and chase, I send that directly to him so he can work that stuff in.

The most important part of editing for me is when I make my select rolls. I'm looking at all of the dailies that were shot, and taking pieces out of it that I am emoting to. So in building those select pieces I am able to craft the scene together. Once the scene is evolving, there are always choices that an editor has to make. What's more important? Is it what the person is saying, or is it the reaction to what the person is saying? I'm a big fan of reaction shots because what I'm telling you may not be as important as how you are responding to what I am saying. The actors are great in giving me those reactions. As an editor, I'm trying to be on the right shot at the right moment.

As fun as it is to cut the action pieces, if you don't care about the people, they don't mean a whole lot. So I hope that what I bring to the movie is a sense of character development and



4.215

4.214 Chief model maker Michael Lynch works on the 1:90-scale Utapau wall, which measures 34 feet wide by 16 feet tall. The miniature was sculpted from urethane foam, Y2-Klay was applied to the surface, and then rock textures were carved into this. The landing platforms and structures located in the wall's crack were made from a series of 12 modular designs that were reconfigured for different shots and for the scene where Obi-Wan chases General Grievous.

4.215 Michael Murnane's concept for the sect-like inhabitants of Mustafar, who Lucas moved to Utapau.

4.216 Final frame showing Obi-Wan as he arrives on Utapau and meets with Tion Medon (Bruce Spence), the master of port administration in Pau City. Obi-Wan initially indicates that he has arrived to refuel as he searches nearby systems for General Grievous, but Medon reveals that the droid general is located on Utapau and is holding them hostage.

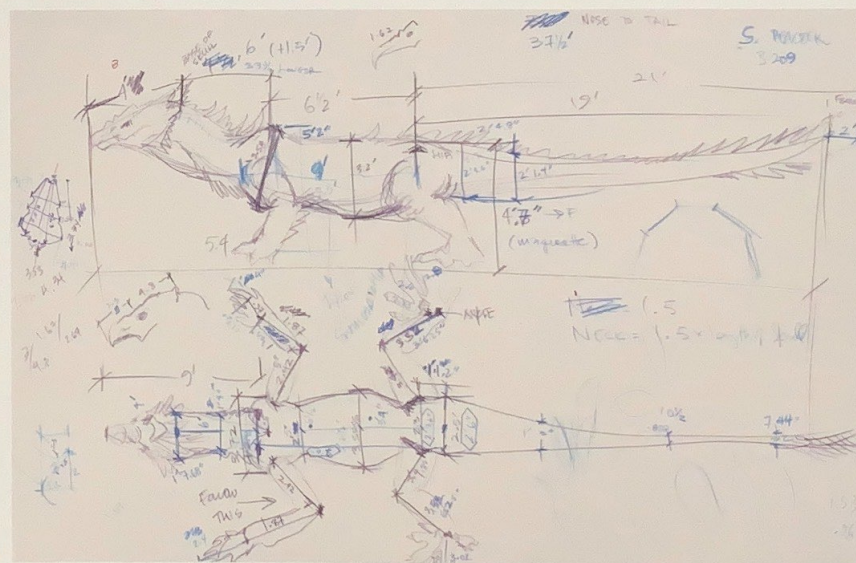
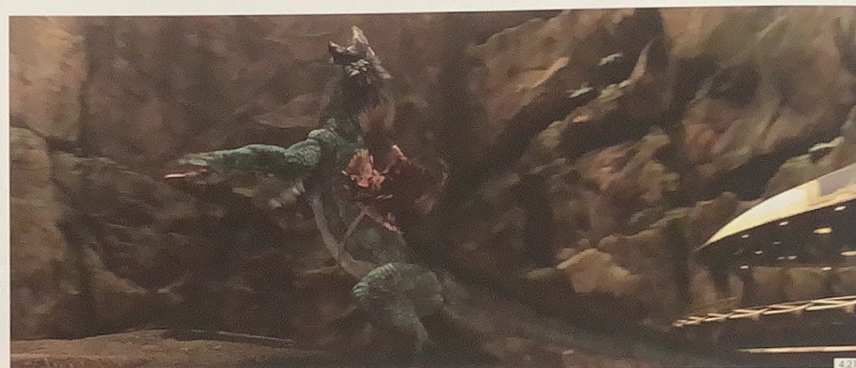
4.217 Ryan Church's art for Utapauan architecture took inspiration from insects, sea creatures, and seashells (January 9, 2003).



4.217

“Eighty percent of Boga’s body is scales. Some of that scale detail was modeled in, but most of it was done with a bump and displacement maps by the Viewpainter. We knew we were going to get pretty close to him, so we spent a lot of time detailing the head, giving the eyes reflective and specular qualities that would really make them pop.”

Kevin Reuter / Look Development Supervisor



storytelling. It's funny because so much of this is shot against the blue and green screens without the distracting backgrounds that all I have to focus on is the performances. It's allowed me to zero in on what's going on within the characters, and between them. As I told George when he asked me how cutting was going, I said, "Basically performance is motivating about all my cuts." The actors are giving me good material.

Right now my favorite scene in the movie is when Obi-Wan goes to Padmé's veranda and tells her that Anakin has turned to the dark side. The scene, right now, is like butter. It works on so many different levels. Natalie's performance is excellent. You can tell that Obi-Wan is torn because he has been asked to kill his Padawan, to kill his best friend. You can see the heartache. The scene is wonderful. Reading it on paper didn't have nearly the same effect on me as seeing the scene play out. I cut with music, so I use John Williams as often as I can. And adding music to that scene was the clincher.

I've probably got an hour and 30, 40 minutes cut. If you take into consideration the sequences that have been cut by Ben using the animatics, then we probably have well over two hours cut. Most of the heavy dialogue scenes are already shot, and what's left on the schedule are the fight and action sequences

which won't take up too much screen time. So, I'm hoping the first cut will be under three hours.

Imprisonment

B-Roll Log / June 18, 2003 Costume props supervisor Ivo Covey says that they will be making Darth Vader's helmet to fit Hayden better. The original helmet was asymmetrical. He has made a new faceplate, and scanned it. Ivo says that their system makes things quicker, except the computer has crashed.

B-Roll Log / June 28, 2003 A prop is being cut by a computerized machine. Ivo explains that Darth Vader's faceplate was made in this machine. The rough cut took over 30 hours and the fine cut takes 19 hours. "At least this way, I will know that the face will be symmetrical. When I come in tomorrow morning, it will be done. By the end of tomorrow, we will hopefully have the other half, and we will see how the entire face looks." Ivo shows in a book how Darth Vader's



LIZARDMALE
1. Color Map
Starting with a white model, the creature's color is often defined by applying the color map. This generally, although not always, incorporates the actual texture.
2. Bump Map
This map often uses the color map as a starting point. However, it refers to a separate texture, meaning the dark areas appear as depressions and the lighter areas as raised.
3. Specularity Map
This map determines the shininess, how the light interacts with the surface.
4. Opacity Map
The transparency map is also generated with the color map, defining the areas that are transparent and the areas that are opaque.
Note: Although these maps are used by all models, there are many other types of maps generated in the world of a particular model.

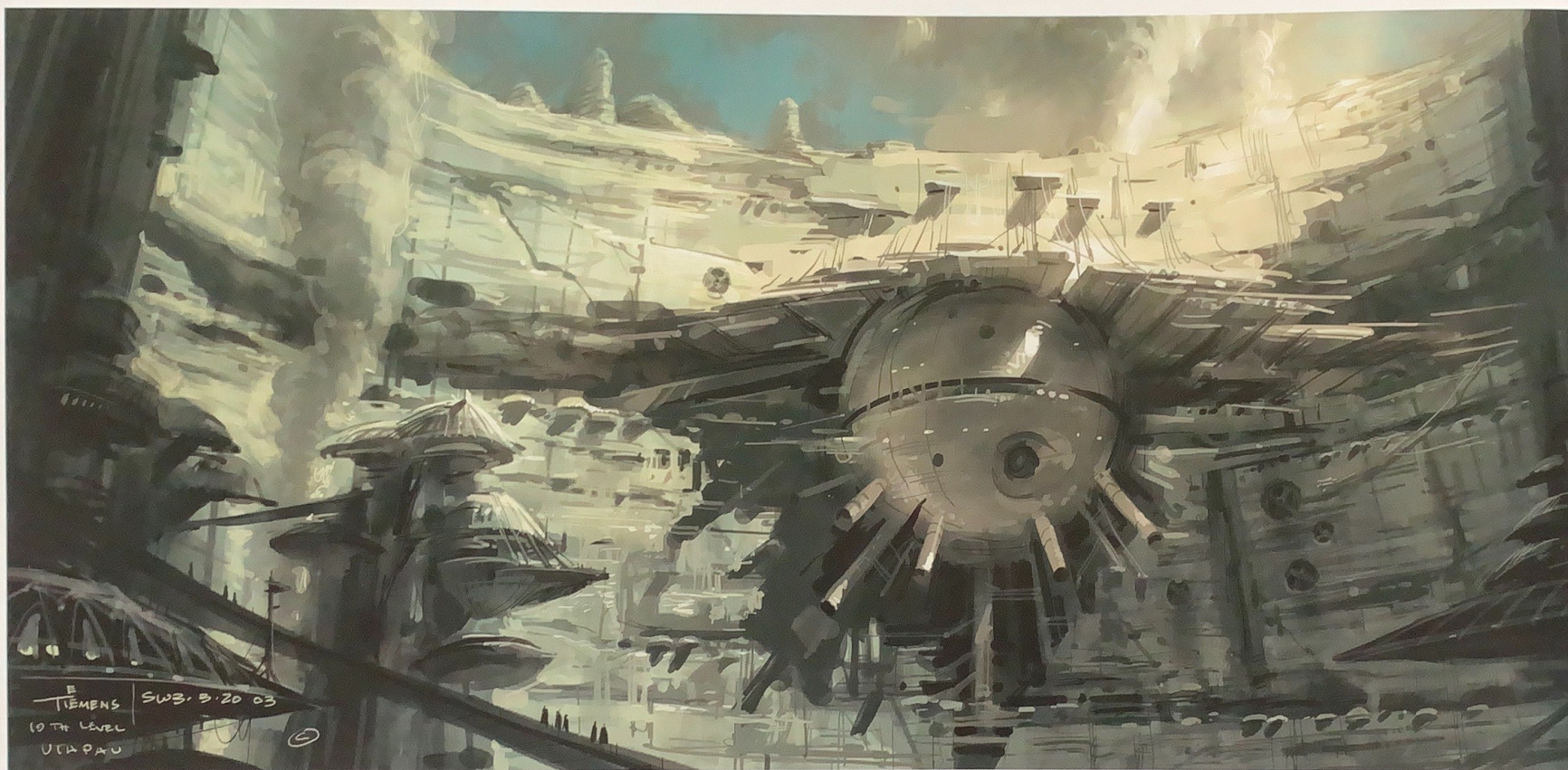
4.221



4.222

- 4.218 Sang Jun Lee's concept for a lizard creature, which would form the basis for the Boga lizard (November 1, 2002).
4.219 Obi-Wan astride the Boga lizard—his transportation as he searches for General Grievous through the complex corridors inside Utapau's sinkhole.
4.220 Notes showing the plan and elevation drawings—nose to tail—of the Boga lizard. Precise measurements have been taken from the maquette to determine the life-size dimensions when transferring Boga into the digital realm. For example the length from hip to tail is 19 feet, but 21 feet with feathers.

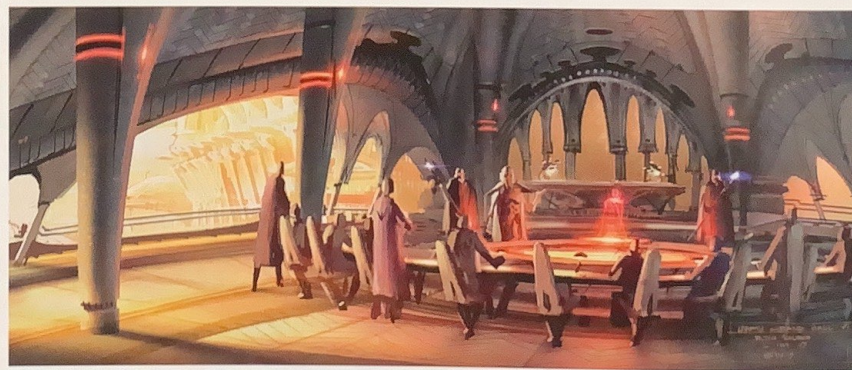
- 4.221 Various CG elements of the Boga model drawn by creature viewpoint supervisor Susan Ross. There are four noted here: the color map, which defines the creature's hue; the bump map, which describes the texture of its exterior surface; specular, which determines how the light interacts with the surface; and opacity, which is a transparency mapping.
4.222 After seeing an Al Williamson drawing of a stormtrooper riding a lizard for an unpublished Star Wars newspaper strip, George Lucas asked for a lizard for Anakin to ride. Robert Barnes delivered several ideas, including this one, dated July 13, 2002, and when the script was written it became the Boga lizard ridden by Obi-Wan.



4.223



4.224



4.225

"Hello there."

Obi-Wan Kenobi



designs have changed between movies. Ivo says that Darth Vader will be on set in four weeks. "So we will probably be ready in three weeks and six days."

Ivo Coveney / Costume Props Supervisor We can't work out how the head fitted onto the shoulders. Gillian Libbert, our costume archivist, has fitted many Vader people over the years, and she's said it's never fully worked. So our biggest challenge is to make sure that the neck works beautifully with the shoulders, so that Hayden is far more comfortable.

B-Roll Log / August 5, 2003 Ivo had a fitting with Hayden last week. "We've made lots of subtle improvements and changes. We realized that from a certain angle, it looked like there was no back to the helmet, so we are adding a piece inside the back to fill it out."

B-Roll Log / August 6, 2003 Ivo has been painting the Darth Vader head black. "We have a fitting with Hayden tomorrow. Hopefully after tomorrow's fitting, we can start molding him. Costume designer Trisha Biggar will show

tomorrow's photos to George. Everybody knows the image of Darth Vader, so you think it would be simple, but we have discovered that it is quite a complicated piece. Spraying it black made our perception of its size different."

Scene 174 was shot on September 1. Darth Vader rises from the operating table, entombed in a suit that is keeping him alive. Darth Sidious tells him that Padmé is dead. Enraged that he is too late to save her, Vader cries out. It was the first time Christensen wore the suit on set.



- 4.223 Erik Tiemens's concept for Utapau's Level 10, where Tion Medon indicates thousands of battle droids are located (March 20, 2003). Its spherical structure recalls that of the Death Star, even suggesting a super laser concept.
- 4.224 General Grievous (right) meets with the Separatists on Level 10. They are seated in a row as Grievous announces that they are to go to Mustafar.
- 4.225 In Ryan Church's concept for Utapau Level 10 the Separatists gather around a conference table, indicating a more collaborative arrangement, as they take instructions from Darth Sidious via hologram (May 16, 2003).
- 4.226 Fearing that Grievous may leave, Obi-Wan confronts him and is surrounded by Grievous and his guards.
- 4.227 The sinister animatronic head structure for Nate Gunray, which is worn by Silas Carson. Complex mechanical and electronic mechanisms, such as joints, actuators, and motors, control different aspects of the character's facial movement. An exterior "skin" is overlaid to provide a realistic representation of Gunray.
- 4.228 This is Church's idea for shot UTC 170 showing Obi-Wan surrounded by a variety of menacing droids (August 2, 2004).



4.229

- 4.229 *General Grievous: "You must realize you are doomed."*
Rob Coleman: "All the animators got really excited about Grievous as soon as we knew about him. He's creepy to look at, and he wields lightsabers."
- 4.230–231 *After Obi-Wan dispatches the guards, General Grievous orders his droids to stand down: "I will deal with this Jedi slime myself." Final frames of Obi-Wan battling with General Grievous, who has twice the number of arms and four times the number of lightsabers.*
- 4.232 *Early concept artwork by Ryan Church showing the clone troopers hang-gliding into the sinkhole as they begin their attack (October 17, 2002).*

Hayden Christensen It took about 20 minutes to get suited up. There's no Darth Vader underwear. I wore my own. It starts off with the pants, followed by the boots and a massive muscle suit. There's a leather jacket, then a fiberglass chest piece. Then there's a leather jock piece, which looks a little funny. Then it's the helmet and the cape. The lights on the costume don't start blinking until they plug you in on the set. As each piece comes on, layer by layer, you feel the essence of Darth Vader overcoming you.

To make adjustments for my height difference, they put huge lifts in the shoes, so it was difficult to walk. I told George I needed to practice walking around in the costume, because my movements were so rigid and I didn't feel like I was walking like the Darth Vader we knew from the original trilogy. He told me, "That's what I want. Anakin is not acclimated in this suit yet. He shouldn't be able to walk effortlessly." It was an interesting choice.

Being behind the Vader mask is almost indescribable. It's so cool. It's empowering. A beastly feeling wells up inside



4.231



4.230

you—and there's a sense of imprisonment. I thought that was appropriate for what Anakin should be feeling. But it's claustrophobic in there: your vision is extremely limited. It's hot and it's awkward to move around in.

You can see what's directly in front of you and straight down because you're not seeing out through the eyes—you're looking out through the mouthpiece. There's no fighting in it—just walk, hit the mark and say a line. That's about the extent of it. I was a little nervous because I didn't want to fall over and scratch the suit. Having George look at me, and smile ear to ear—it was one of those surreal moments that will stay with me for a very long time.

George Lucas Having Hayden finally make it into the suit completes the circle of the movies. That's the final missing piece; now they're all connected.

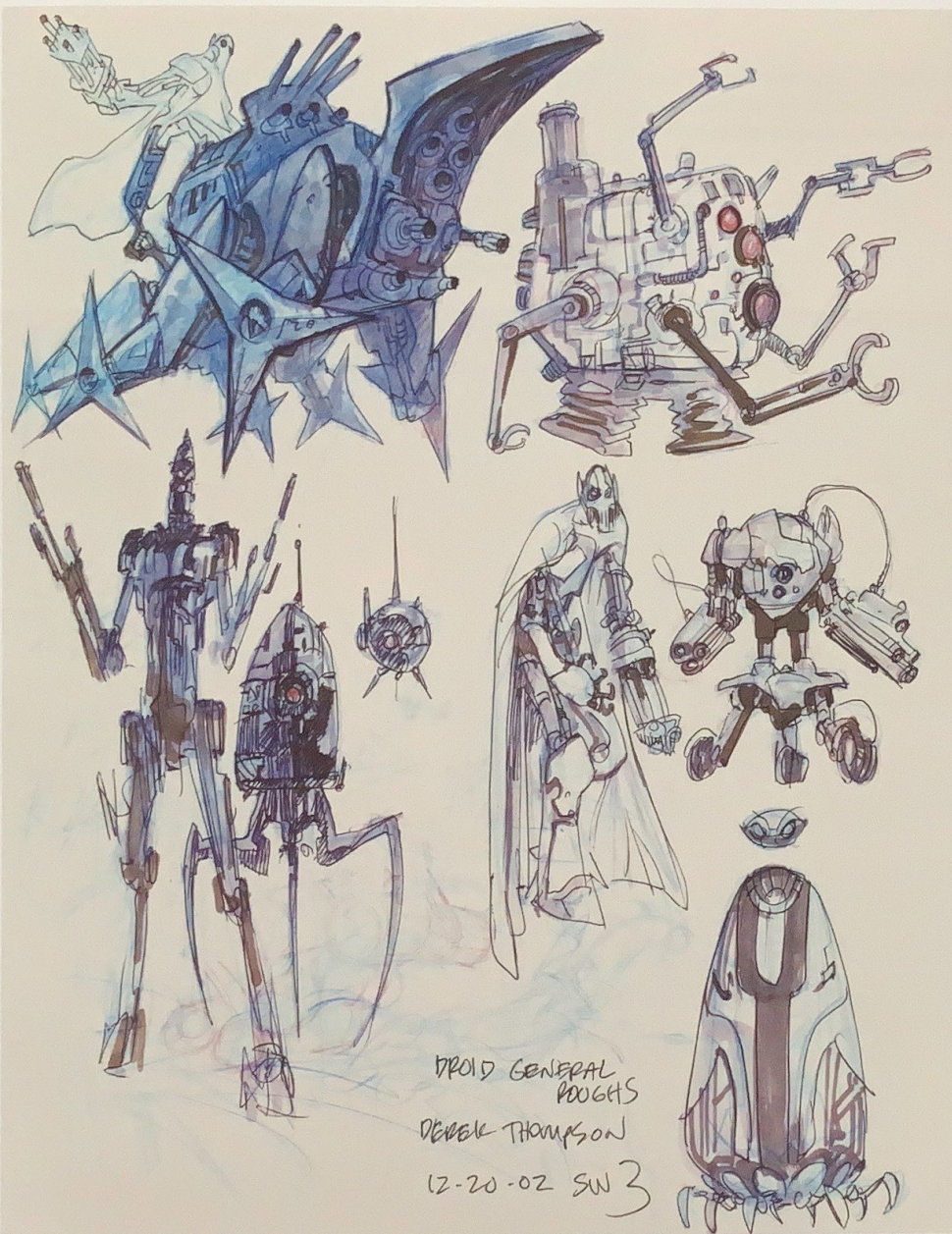
Rick McCallum It was probably the most powerful moment I've ever had on set on anything I've ever done. It was a seminal moment. There were lots of films prepping at the studio, so a lot of people were around, and they all heard that Darth Vader was going to appear. There must have been about 1,500 people gathered outside the stage, so we opened it up and let everybody that we could inside and sit down on the floor.

Hayden put the mask on. It was absolute unequivocal silence. All of a sudden, you could hear a few people losing it. For most people, especially the crew, and a lot of the actors, *Star Wars* was one of the first movies they'd ever seen, and a big reason that a lot of them got into the business.

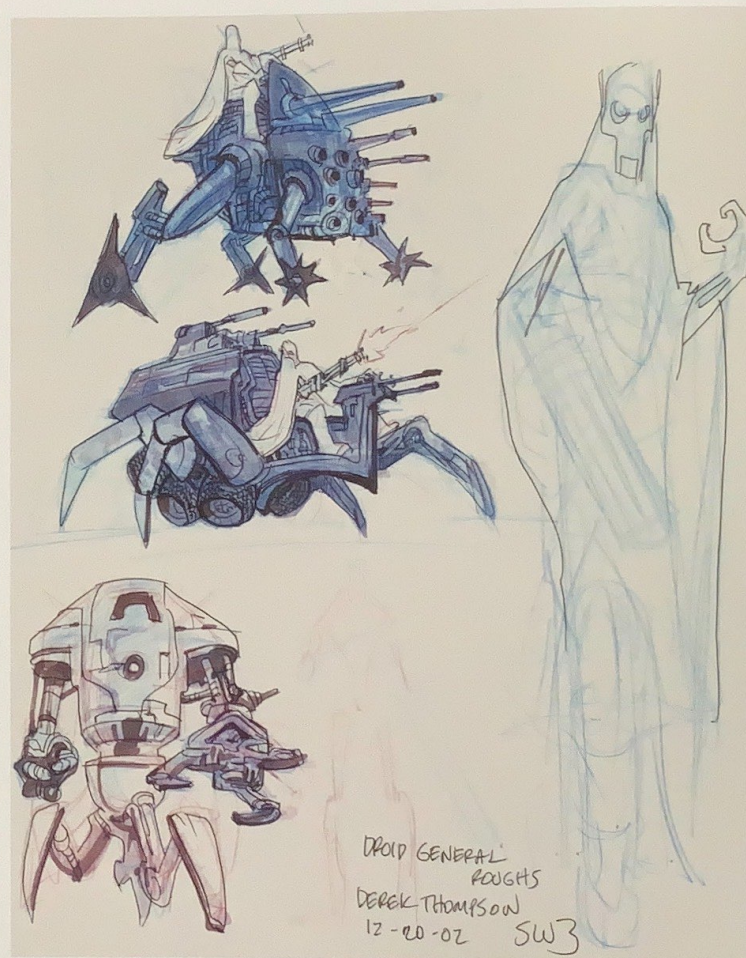
***"I wanted to make Grievous move differently,
as if he's not fully in control of all his mechanical
pieces, which is kind of creepy and weird."***

Rob Coleman / Animation Director





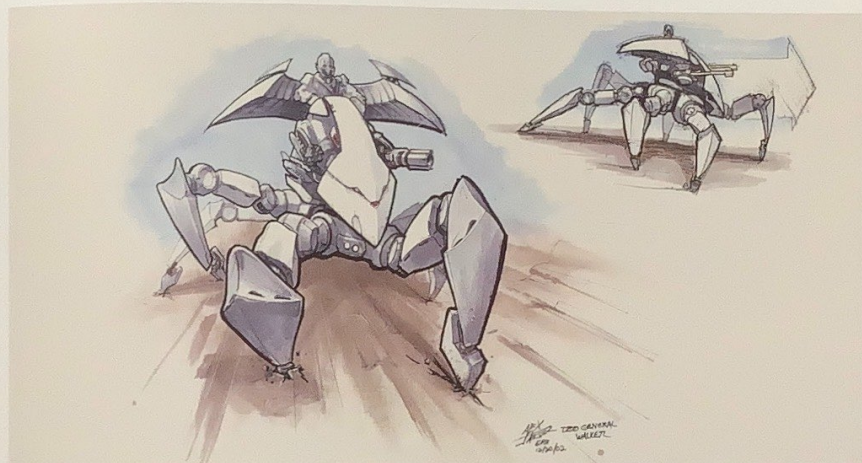
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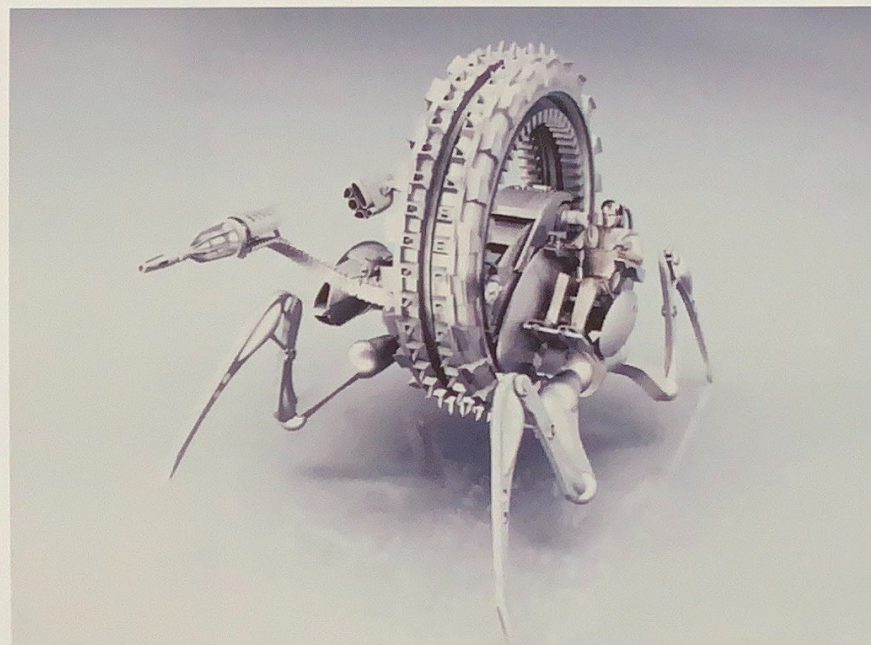
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“Originally, George asked us to make some droids that can chase Obi-Wan, who’s on a lizard that can climb walls. So this was meant to be a droid in and of itself. Then later he said, ‘Yeah, make that into the droid general’s vehicle.’”

T.J. Frame



4.235



4.237



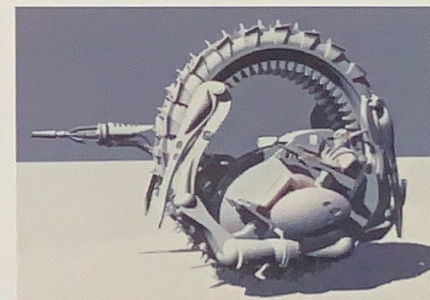
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4.233–234 Derek Thompson's sketchbook for General Grievous as well as additional droids and vehicles that he might use (December 20, 2002). Note that in these rough ideas Grievous has a gun attachment on one arm.

4.235 Alex Jaeger's vehicle concept for General Grievous has a crab-like movement (December 20, 2002).

4.236 Ryan Church's art for Grievous's vehicle, here being pursued by Obi-Wan on Boga (December 18, 2002).

4.237–238 3-D computer models for Grievous's vehicle designed by T.J. Frame (December 20, 2002). The original concept was that the droid was autonomous, that the wheel allowed it to move at high speed over smooth surfaces, and that the feet would allow it to crawl over uneven terrain as well as to climb rock faces. Lucas asked for it to become the general's vehicle, so this revision seals the general adjacent to the giant wheel.



4.238



4.239

4.239 George Lucas asked the design team to explore locations for Obi-Wan's pursuit of Grievous. Iain McCaig presented storyboards of Obi-Wan versus Grievous and droids among the windmills clinging to the sinkhole wall (March 19, 2003).

4.240 Obi-Wan battles Grievous as Boga battles the wheel droid with the rock bridge crumbling beneath them in Derek Thompson's concept (March 27, 2003).

4.241 The landscape proves hazardous in Derek Thompson's concept, which shows both Obi-Wan and Grievous, as well as their mounts, caught in the grip of tentacle creatures (March 27, 2003).

4.242 Erik Tiemens conceived a vast cavern with Grievous and Obi-Wan fighting top right, while figures and a beast watch from below (March 27, 2003).



4.240



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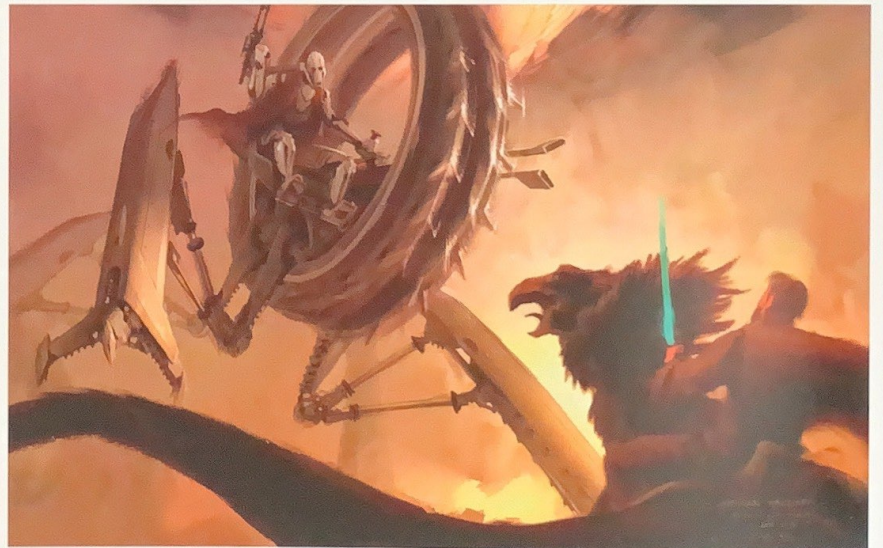




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4.244



4.245

- 4.243 Grievous chases Obi-Wan through an underground city in Ryan Church's concept art (March 27, 2003). The walkways are constructed in the vertical cracks of the rock.
- 4.244 Ryan Church's art highlights the climbing abilities of both Boga and the wheel droid (March 27, 2003).
- 4.245 Grievous and Obi-Wan face off armed with a blaster and a lightsaber in this Church artwork (January 9, 2003). Grievous later carried an electrostaff.
- 4.246–247 Final frames of Obi-Wan jumping across from his trusty Boga onto Grievous's wheel droid and grabbing Grievous's electrostaff as the vehicle hurtles through the Iapau landscape.

Afterwards I got 10 cases of champagne and 40 cases of beer over to the stage. Everybody went completely berserk. We opened up the stage doors and got completely drunk. I don't think people got home until midnight that day. It was a very emotional evening.

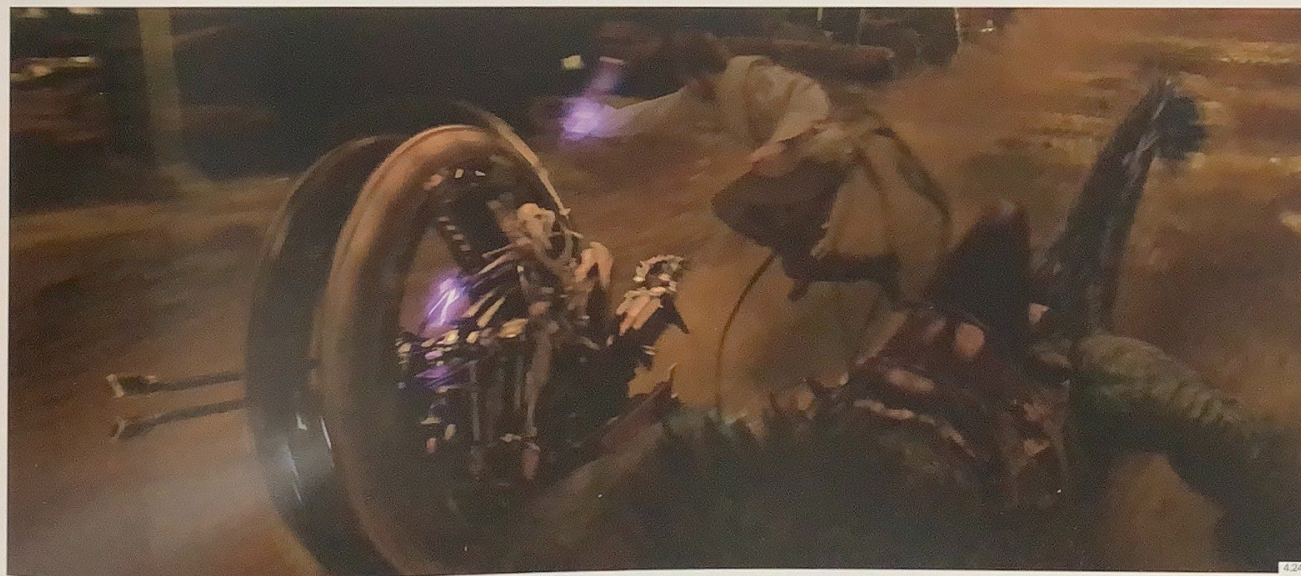
Pathetic

On the morning of September 1, Ewan McGregor and Hayden Christensen shot the scene on the lava beach where Obi-Wan defeats Darth Vader and leaves him to die. The shot was completed with VFX.

Roger Guyett / Visual Effects Supervisor We're looking down on Obi-Wan as he slices and dices. It's a fast bit of lightsaber work seen in this overhead spiral maneuver, which was done with a digital double. Obi-Wan gets the better of Anakin and cuts off two of his legs and his left arm, so he's left as a torso with his metal right arm.



4.247



4.246

Then Anakin lands on the bank of the lava river, which was done with Hayden wearing blue over his arms and legs so we could digitally remove them, and he catches on fire because he's so close to the lava. We shot a dummy torso catching on fire, plus Hayden wearing burnt clothing and a number of different stage makeups that we're joining together with some individual fire elements. Then, when he's on the bank and on fire, you see the dark side manifesting itself in Anakin's face—we added an element a bit like Sidious's horribly scarred face. It is extremely horrific.

George Lucas It's important at the end that you see the physical transformation of Anakin into this burned-up crisp because that's the suffering he had to live with for the rest of his life.

Dave Elsey / Creature Shop Creative Supervisor I asked George in one of our very first meetings, "How much can we burn him?" He said, "It's going to be a bad burn, but for PG." I went away and spent about a week doing designs trying to do PG-rated burns, and eventually I went back to him and said, "I don't know what a PG burn is. I think we should try and push it as far as we can." George said, "Okay, then we'll make it a PG-13." I thought, "Wow, that was unbelievably easy." That freed us up to do a very realistic full-on burn.

On September 2, Christensen filmed all the scenes requiring him to wear the burn makeup, as Darth Vader is found on the lava beach by Sidious, taken to the Imperial rehabilitation center, and operated upon.



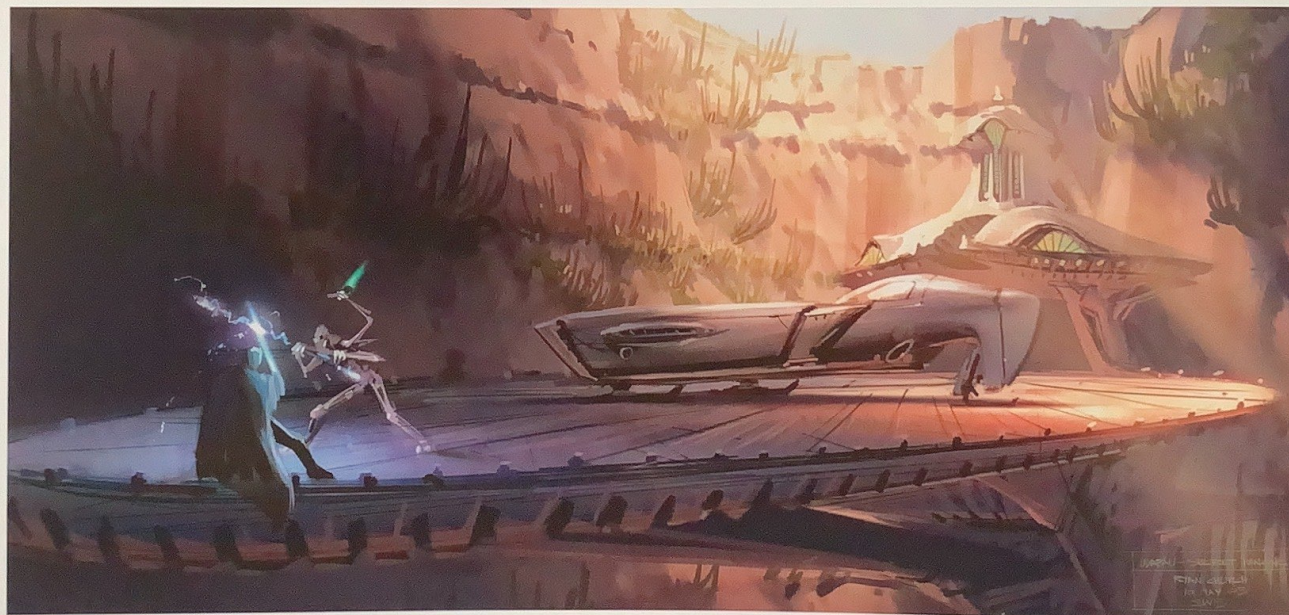
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Hayden Christensen Filming was grueling, but afterward, when they call “cut” and you go in to have the prosthetics taken off, you feel fulfilled. It’s amazing how emotionally involved you are in this film, watching the relationship between Anakin and Obi-Wan fall apart, watching them fight, and then that end result. It’s tragic. As Anakin makes that final transition into Darth Vader it informs the original trilogy and changes the character. He becomes a much more pathetic figure.

Dave Elsey I took my producer, creature shop supervisor Becky Hunt, and my wife Lou to the rushes, and we watched him go through this torture, and suddenly I went, “Oh my God, what have we done?” The lights came up, and I turned to Becky and asked, “Do you think we got away with that?” She was crying. She said, “That was horrible, really horrible!” We went back to the shop thinking that there might be a phone call telling us there was no way they were going to be able to show this. I fully expected that for about a week, and then a week turned into a year, and before I know it, the movie’s coming out and it’s got a PG-13, and I think I know why. I know it’s horrific, but it’s what I wanted to see when I was 10.

Uplifting Moments

On September 3, 4, and 5, the fight scene with Count Dooku and Dooku’s execution at the hands of Anakin were filmed on the General’s Quarters set. The scenes were all shot with stunt double Kyle Rowling. In fact, Christopher Lee had already filmed his shots on July 31 and August 1 against blue screen and had his head scanned to be used for digital replacement.



4.249

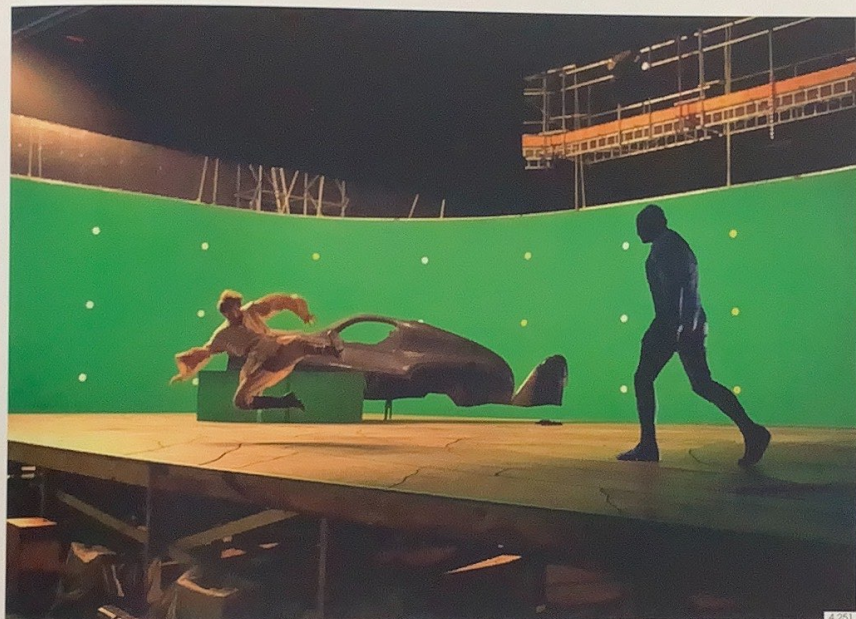
Rob Coleman Christopher Lee is another three years older than he was in the last movie. He can still move his arms around quite well, but his legs can’t do that much. So for Dooku we did head replacements on the stunt double. There were also some flips and other moves that were too dangerous even for the body double to do; so for those shots we did a fully digital Christopher Lee. There’s a lot of close-up intercutting between the real Christopher Lee and the digital double, and it’s seamless.

On September 11, Ewan McGregor filmed the lightsaber fight between Obi-Wan and General Grievous on Utapau.

Nick Gillard General Grievous fights Obi-Wan a couple of times. Originally he fought with an electrified power staff, but about three weeks before we were going to shoot it George decided

“So uncivilized.”

Obi-Wan Kenobi



4.251

he would have four arms and a lightsaber in each arm. Obviously we could handle two arms, the extra two were difficult. He's very tall so we thought of sitting people on shoulders. We thought of suspending somebody from the ceiling.

Rob Coleman They tried doing it with two stunt guys sparring with Obi-Wan at once, one standing behind the other, so they could have Obi-Wan fighting all four arms at the same time, but that didn't work very well. So they had one stunt fellow learn both the upper-arm and the lower-arm parts of the Grievous fights. Then they shot one pass with him doing the upper arms, and a second pass with him doing the lower arms. We combined those passes on my Mac on the set, so I could look at the fight with all four arms.

Nick Gillard In the end we decided to cut off two of his arms quite quickly.

On September 15, Lucas filmed the last scene of the movie, scene 180, where Obi-Wan delivers Luke to Aunt Beru (Bonnie Plesse) on Tatooine.

George Lucas Each movie has a beginning, middle, and an end. And each trilogy has a beginning, middle, and an end. The idea is to have each of the endings be inspiring. These are adventure films and comedies, not dark, deep dramas, although bad things do happen.

The ending of the first movie of a trilogy is uplifting, and the last one is uplifting, but the only one that isn't uplifting is the middle movie. Trilogies aren't constructed that way; they have tragedies.

I don't like making a down movie. In *The Empire Strikes Back*, I was worried about the father cutting his son's hand

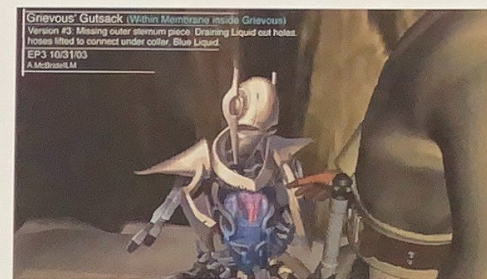
off and about how little boys would take that. But it turned out all right. Lando and Chewie fly off into what was supposed to be a sunset to go rescue Han so that the ending's not a complete downer.

Paul Duncan The end of Episode II was scripted to be the wedding with Anakin's metal hand holding Padmé's, and then Palpatine surveying the clone troopers as they go off to war. But you switched the order in the edit.

George Lucas This was so that it ended, "And they lived happily ever after." But they don't. The hand shows that he's beginning to turn into the monster.

Paul Duncan The end of Episode III is the middle of the six movies.

George Lucas I had a struggle to make the last couple of shots, where Leia is with Bail Organa and his wife in Alderaan, and Luke is handed over to his aunt and uncle in Tatooine, as uplifting moments. Even though it's at sunset and it was very much like Luke's wistful moment in Episode IV, it's there to give hope.



4.250

4.248 Ryan Church's concept for the duel between Obi-Wan and Grievous (March 27, 2003). Note that in the background Boga attacks the wheel droid in a display of lizard loyalty.

4.249 The final showdown of Grievous and Obi-Wan at a secret hangar where Grievous has an escape ship waiting is shown in Church's concept (May 10, 2003).

4.250 Concept art for Grievous's gussock—his Achilles' heel—by Aaron McBride (October 31, 2003). McBride delivered different versions detailing the placement of Grievous's brain, heart, lungs, liver, and kidneys within the gussock, and this concept shows blue liquid draining through holes.

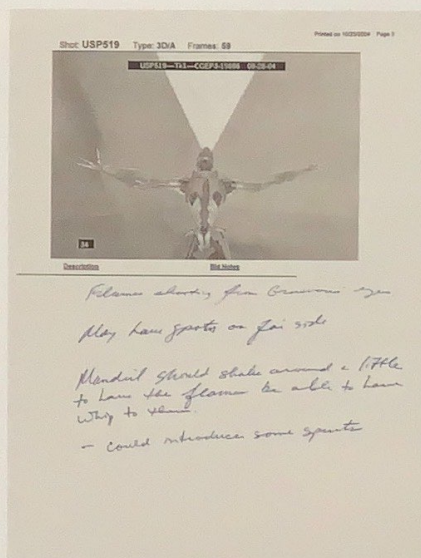
4.251 Filming Obi-Wan's battle with Grievous (Kyle Rowling) against a green background with a basic model of the ship in the background. Kyle Rowling is dressed in blue to provide a physical reference for Ewan McGregor to interact with during the fight.

4.252 In Iain McCaig's storyboard Obi-Wan uses a blaster to puncture Grievous's gussock, and Grievous explodes. On August 21, 2003, while performing the scene Obi-Wan's dialogue was changed so that as he walks over to Grievous's carcass he looks at the blaster and throws it away saying, "So uncivilized."

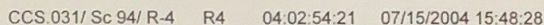
4.253 Notes for shot USP 519, the demise of General Grievous, dated August 26, 2004, that defines the visual representation of the pyrotechnics, including "Flames shooting from Grievous's eyes" and "Could introduce some spurts."



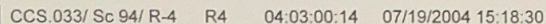
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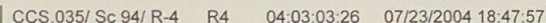
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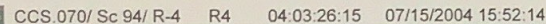
Palpatine (cont'd from CCS.029): "...you must embrace a larger view of things. Be careful of the jedi, Anakin."



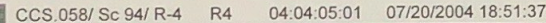
Anakin watches Palpatine suspiciously. Palpatine should cut through FG right to left as Anakin looks at him, right to left.
No dialogue.



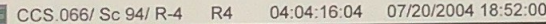
Palpatine: "They fear you. In time, they will destroy you. Let me train you."



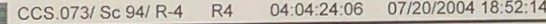
Palpatine: "(Only through me can you achieve a power far greater than any Jedi can imagine.) Learn to know the dark side of the force, Anakin, and you will be able to save your wife from certain death."



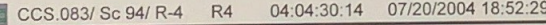
RESHOOT MCU Palpatine over shoulder Anakin
Palpatine settles into place, comes to a stop.
No dialogue



Palpatine: "The dark lords of the sith believe in security and justice also. Yet the jedi..."
(cont'd over CCS.073)



Palpatine: (cont'd from CCS.066) "... consider them—" Anakin cuts him off: "To be evil."
Palapline: "From a jedi point of view."



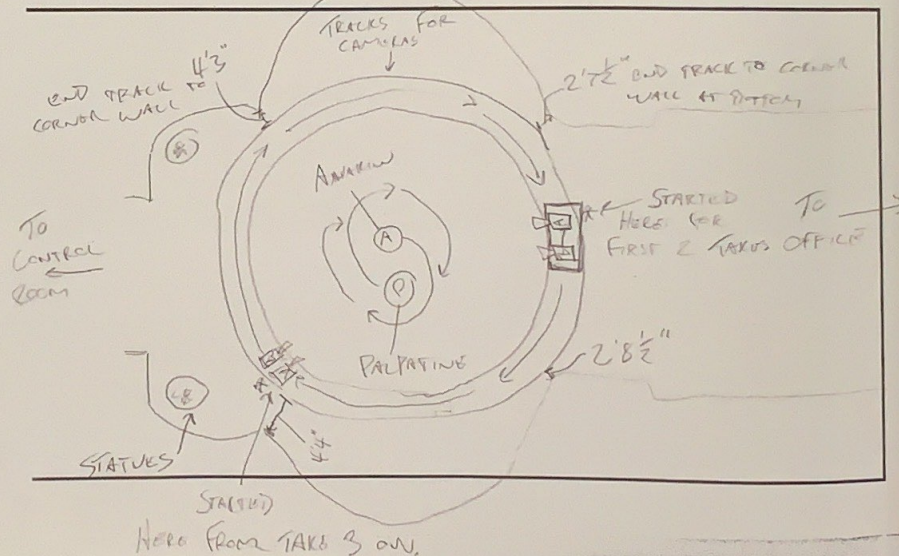
Palpatine: "The difference between the two is that the sith are not afraid of the dark side of the force."

SCENE# V94R LOCATION PALMISTON OFFICE DATE 7/14/03
Roll# A18 CAM.Report# _____ 4 Perf or 8 Perf
SHOT DESCRIPTION: 1. A man in a blue shirt and black pants is walking down a hallway.

4 DM FILTER - CAMERA & LENS Information T2-82

Camera <i>A</i>	Lens <i>Bn</i>	Height start: <i>5'5"</i>	Tilt start: <i>2:36</i>	Pan start: <i>/</i>	Dutch/Roll start: <i>/</i>	FPS <i>24</i>
Filter	Film Stock	end:	end:	end:	end:	Focus <i>E</i>
Aspect Ratio: <i>1:77</i>						

Camera Mount: sticks / crane / dolly / steadicam / car
Camera Move: lock-off / pan&tilt / dutch (roll) / dolly / boom / crane

[illegible]

"Anakin, if one is to understand the great mystery, one must study all its aspects, not just the dogmatic, narrow view of the Jedi. If you wish to become a complete and wise leader you must embrace a larger view of the Force."

Chancellor Palpatine

4.254 Shoot sheet, dated July 29, 2004, for the August 23, 2004, reshad for scene 94 where Palpatine reveals he is a Sith Lord and tries to convince Anakin to turn to the dark side. There is a restructuring of the dialogue to emphasize Anakin's fear of losing Padmé and Palpatine's justification of Sith ideology.

4.255 The Matchmaker Plate Information Sheet, dated July 14, 2003, showing the camera tracking as Palpatine tempts Anakin toward the dark side. Anakin and Palpatine circle each other as the young Jedi realizes that his mentor is Darth Sidious.

4.256-257 Anakin finds out that Palpatine is the Sith Lord the Jedi have been seeking. Palpatine wonders aloud as to whether the young Jedi will kill him, and he can feel that Anakin wants to. Palpatine is confident that he can use the power of words to persuade his protégé. Indeed, the Sith Lord is so assured that he faces away from the young Jedi, even as Anakin wields his lightsaber. In the background is a frieze, requested by Lucas, depicting an ancient battle between the Jedi and the Sith, the light and the dark, as planned and sketched by Erik Tiemens and executed by model maker Richard Miller.

Episodes I, II, and III are darker in tone because it's the fall of a hero. It's a bit more mythological than Episodes IV-VI, like Siegfried, where he's doomed from the start and you're watching how that happens. Maybe one of the reasons why the comic characters and the humor is a little less successful is because they work better in upbeat movies and don't work in a darker reality.

If you look at the films in order, and you don't know what's going to happen, the ending is better. You know that Darth Vader survived—he's not going to be the hero anymore, but you don't know that he's a monster. And his kids survived too.

September 17 was the final day of shooting. The last scene to be shot featured Darth Vader, the Emperor, and Governor Tarkin on the bridge of an Imperial Star Destroyer overseeing the construction of the Death Star. Dave Eisey had recommended Wayne Pygram to take on the Tarkin role, which had been played by Peter Cushing in Episode IV, noting his physical resemblance to the actor.



Dave Eisey We did a life cast and I started to sculpt on it, and the more I sculpted, the more I realized I had made the most horrific mistake and that Wayne didn't look anything like Peter Cushing!

Eisey eventually resculpted seven times before he was satisfied. Scene 177 was shot after lunch.

Hayden Christensen Everyone from the crew and the production office came out to bear witness and see Vader again. As I walked past people I knew and was friends with, I watched their reactions. It was phenomenal: there was awe and excitement in their eyes, but there was also a certain level of respect that needed to be paid and a tinge of fear. As I walked by, they would gasp, and then they would lower their heads and take a couple of steps back—as you would if Vader was passing.

There was a hint of sadness when I put on that costume. I was given the job of being the connective tissue from Jake Lloyd in Episode I to Darth Vader. Getting to finally don the dark helmet meant something bittersweet: my task was complete.

George Lucas called, "Cut," and principal photography was over. Lucas whispered to David Tattersall that he'd asked for an extra shot so that they made 100 setups in a day.

The shoot had taken 58 days total—five days under schedule.



4.258

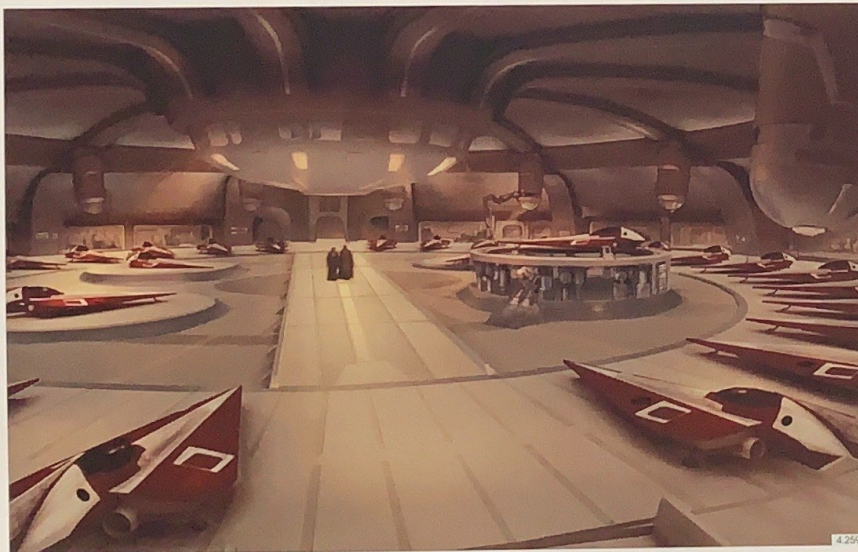
4.258, 4.260 Final frames showing Padmé in her apartment, unsure of what the future holds. She is powerless in this situation—yet she is one of the reasons that Anakin turns to the dark side.

4.259 The Jedi hangar in this deleted scene from Episode II, where Obi-Wan and Mace confer, was reused for when Anakin informs Mace that Palpatine is a Sith Lord. Mace does not fully trust Anakin so he takes other Jedi with him to confront Palpatine.

4.261 Anakin wrestles with his conscience because his loyalties are divided. Instructed to wait while Mace deals with the Chancellor, Anakin has betrayed Palpatine to the Jedi, and yet he is in agony at the thought of losing Padmé.

4.262 Ryan Church's concept for Mace Windu and three Jedi confronting Palpatine in his office (June 12, 2003).

4.263 Final frame showing Saesee Tiin (Kenji Oates), Agen Kolar (Tux Akiyoyeni), Mace Windu (Samuel L. Jackson), and Kit Fisto (Ben Cooke) draw their lightsabers as they prepare to arrest Palpatine. In the shooting script, immediately after Palpatine reveals himself to be a Sith Lord, Mace arrives to force the Chancellor to relinquish the emergency powers given him by the Senate. This meant that Anakin was present while the Jedi were being killed, but did nothing. Lucas reconfigured the action so that Anakin reports to Mace that Palpatine knows how to use the dark side of the Force, is told by Mace to stay at the Jedi Temple, and only arrives at the end of the battle, when Mace has the helpless-looking Chancellor at his mercy.



4.259

Another World

Ben Burt / Editor On one of the early episodes of *The Young Indiana Jones Chronicles* that Louise Rubacky was cutting, George wanted to move a scene, but in the new position there was a person in the background standing against the wall that shouldn't be there. George said something to the effect of, "Is there any way we can erase that person?" They used Flame VFX software to cut and paste the wall over the character and eliminated him, as George wanted. That was a revelation moment. I could see him thinking, "They took out the character without me having to reshoot or to pay for an expensive optical."

He didn't say anything about it, but my observation was that was the moment that we departed from analog filmmaking. If it's possible to simply erase a character for the sake of the story, and make the continuity work properly, then that opens up a big world, and that's what happened.



4.260

We experimented on *Young Indy*, where these seeds were planted. Then with *The Phantom Menace*, we begin to discover that we can manipulate a lot of things in the editing room.

In the past, the material the editor got from the director dictated the things they could do. If I were cutting a sword fight, I'd have Errol Flynn in his coverage, Basil Rathbone in his coverage, their shots together, and a shot of the stuntman doing something. You then thought, "How does it go together?" It's like a puzzle and you cut it together. You wouldn't be thinking, "Can I make this guy go faster?" or "Can this person jump higher?" That wouldn't have been considered. But now it could be. So as an editor, you had to learn to think, "What can I do?" I can make them go faster. I can make them jump higher. I can leave one of the characters out of a shot. I can have somebody get knocked off to the side. "Would that be a good thing?" All these other dimensions were added to being an editor. George called it "three-dimensional editing."

It was no longer good enough for an editor to cut together the best of the dailies. For a dialogue scene, I could cut out take two of Padmé and take nine of Anakin, and put them together in the same scene with a split screen. George would expect it. He'd ask, "Did you look at all the dailies?"

"Yes."

"Did you try every combination?"

"Well, most, because there're 500 of them."

"Well let's see if we can find a better eyeline for this shot."

And because of that feedback loop, because we started manipulating so much in the editing room, even the dialogue

scenes, he said, "It might be a lot better if we had the actors against blue all the time. Then we could cut them out and put them anywhere we want." And so George started filming more and more blue screens on *Attack of the Clones*.

Then on *Revenge of the Sith* we said, "Let's not even build sets if we don't need to. Let's have everybody on a floor and it's blue or green. We'll fix it all in the editing room. We'll generate a background. We'll cut the actors out and key them in wherever we want." Every shot becomes a visual effect.

We had pushed nonlinear filmmaking so far that we didn't worry about a lot of things, because we could control everything. Preproduction, production, and postproduction were blurred together. The editing room becomes a way of restaging the scenes. George can include ideas as he thinks of them. "Let's run it five percent faster so there's a little pep in their step." If the actor can't make a tear, we'll add one in the eye. If the actor blinked at the wrong moment, we can take that out—freeze the eyes. "Blink" or "no blink" makes a difference. A blink is the end of a thought, or the end of a sentence, or it's a transition, and we can decide if we want that in the performance. Once you start doing that, it's another world.

Pixel for Pixel

Lucas returned to Skywalker Ranch in October for editing and postproduction.



4.262

Rick McCallum George works with Ben from 9:00 a.m. to 1:00 p.m., primarily on the action sequences. From 1:00 p.m. until 2:30 p.m. he has lunch upstairs in the animatics department, working on the visual effects shots to use as placeholders. At 3:00 p.m. George works for three or four hours with Roger, primarily on the dramatic sequences. Together, George, Ben, and Roger are creating the first rough cut so we can see the film just before Christmas.

Roger Barton After George and I cut a scene, it's sent without any backgrounds up to the animatic guys. I may have split the screen, added people, taken people away, and done all sorts of things with what George has shot, but it's up to the guys upstairs to make a shot out of it. George works with those guys explaining to them pixel for pixel what it is he wants in his backgrounds and in his CG characters. Once we get those shots back it's a matter of, "Does the composition work?" because once you see that shot in context it may be too busy now that the background and everything else is put into it. So we may tweak it further here and, depending on how much work you do to it, we may either ship it upstairs again for a second revision, or we send it to ILM. It's invaluable on a movie like this, where so much of the frame and what the characters are relating to is missing, to have that step.

By October 31 several scenes featuring Yoda had been prepared for Rob Coleman's team to start the animation process.

Rob Coleman People assume that in computer graphics you're always on-model, but that's not true. You'd be shocked how

quickly a 3-D animator can pull a creature off-model. We had basic Yoda expressions for the last movie, but we had to dial them in each time. We had 15 animators animating Yoda, and each of them would dial in the shapes a bit differently, which made the final expression look different.

This time, we had eight key expressions loaded in ILM's Caricature software. We could hit one button and there would be "concerned" or "meditative" or "angry" or whatever. We could start animating from there.

The animatics team had to deliver the opening space battle to ILM by the end of 2003.

Rick McCallum I have so much respect for Dan Gregoire and all the animatics crew. They work under such enormous pressure because they have to make real what George dreams up every day. Often we're talking about 40 or 50 shots per day, which means 200 or 250 shots a week, of which only about 10 or 15 will

be used. But they have to make the shots for George to be able to pick them. They're working 90- to 100-hour weeks for three years. Often they spend nights. They've brought their own tents to sleep in and have alarm clocks so they can be woken up at three o'clock in the morning, after a shot's been rendered, so they can start rendering another shot. They are true filmmakers.

I have this brief period until Christmas, during which my job is to set up ILM. If you arrive on a set that has 150 people, and you're not shooting, you still pay those 150 people. In the same way, if you don't make up your mind about a visual effects shot, then you have about 350 people getting paid to do nothing. A film used to have maybe 10 to 50 effects shots; we have at least 2,000. Where you once had \$1 million in effects shots, now you have 40 or 50 million dollars' worth. On *Revenge* the production crew worked for nine months, the shooting crew for three months, but the visual effects crew will work for 18 months. And as big as our sets were, we only spent about \$4.5 million on all of them combined. We'll spend \$10 million on our digital sets.



4.263

"The Senate will decide your fate."

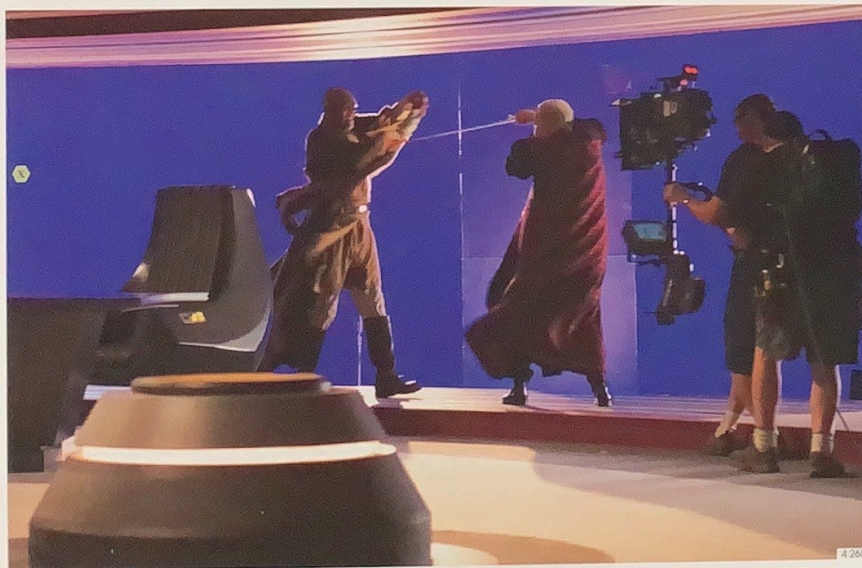
Mace Windu

"I am the Senate."

Chancellor Palpatine



4.254



4.265

Project: Episode 3 - OZ
Bin: zBIN for Printing Reshoots

Bin - page 1 of 1
08/11/2004 12:02:45

30

	CCM.500/ Sc 99/ R-4 R4 04:15:46:13 07/26/2004 15:23:16	RESHOOT MCS Anakin Anakin raises saber Anakin: No!"
	CCM.505/ Sc 99/ R-4 R4 04:15:47:03 07/26/2004 15:24:05	RESHOOT MWS over Mace to Sidious and Anakin Anakin runs in and attacks Mace No dialogue
	CCM.507/ Sc 99/ R-4 R4 04:15:47:21 07/26/2004 15:24:31	RESHOOT CU Mace Mace reacts to Anakin's attack. No dialogue
	CCM.508/ Sc 99/ R-4 R4 04:15:50:10 08/02/2004 20:08:12	RESHOOT MS Sidious Sidious springs forward, laughing, attacks unarmed Mace.
	CCM.512/ Sc 99/ R-4 R4 04:15:51:10 08/02/2004 20:08:38	RESHOOT CU Mace Mace reacts to Sidious' attack. No dialogue.
	CCM.516/ Sc 99/ R-4 R4 04:15:51:28 07/26/2004 15:26:17	RESHOOT MCU Anakin Anakin looks shocked by Sidious' attack. No dialogue.
	CCM.518/ Sc 99/ R-4 R4 04:15:53:04 08/02/2004 20:09:08	RESHOOT WS Mace over Sidious Sidious hurls lightning bolts at Mace. No dialogue.

4.266



4.264 Having quickly dispatched the other Jedi, Darth Sidious attacks Mace.

4.265 A Steadicam was used to shoot the duel between Mace and Sidious to give an immersive feel to the fight.

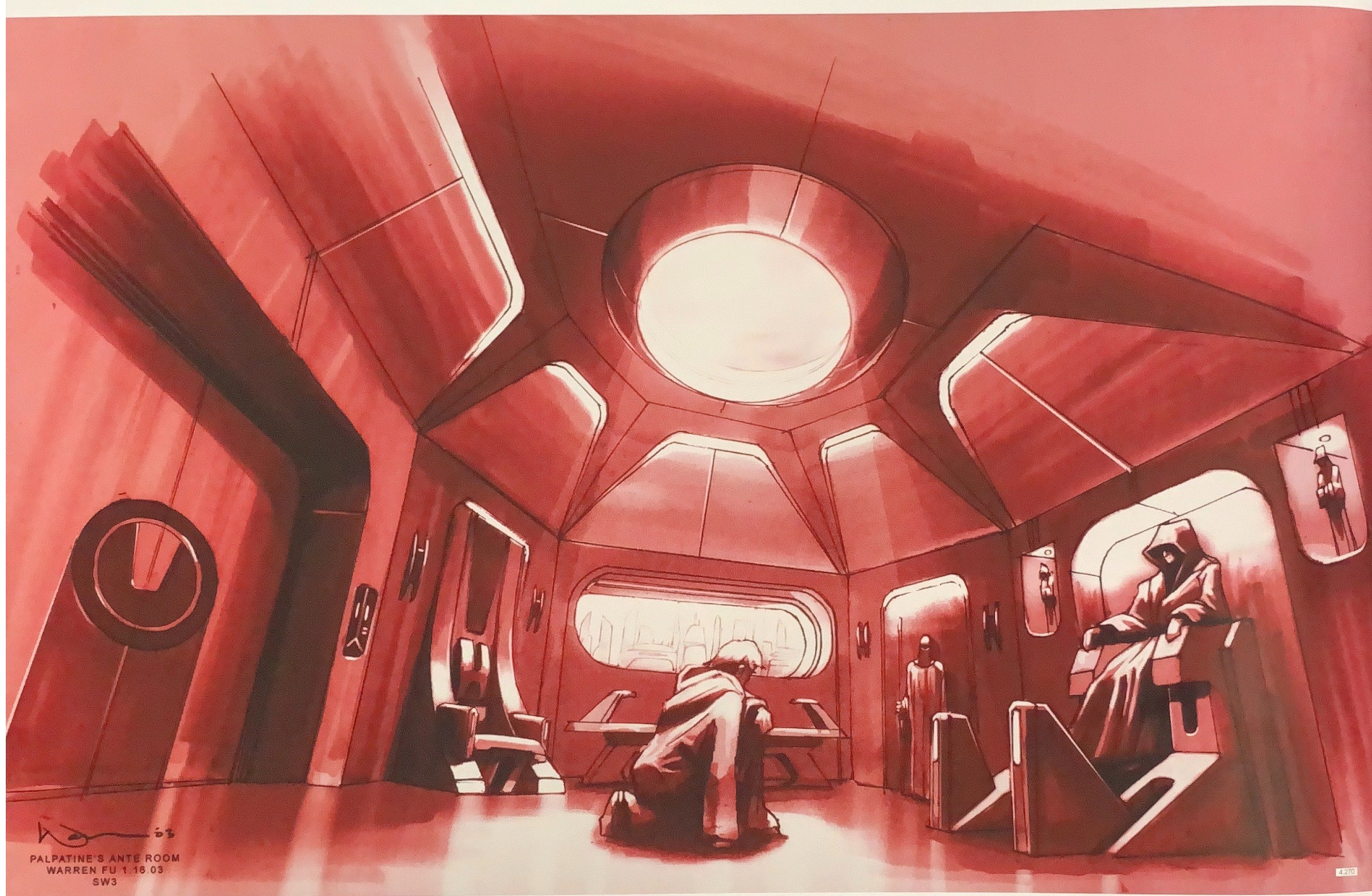
4.266 Shoot sheet, dated August 11, 2004, for the August 2004 shoot where the fight between Mace and Palpatine, and Anakin's intervention, was revised.

4.267 Final frame of Mace's lightsaber smashing the window of the high-rise building.

4.268 Sidious uses Force lightning to defend himself from Mace Windu, but when Windu reflects it back, it disfigures Sidious.

4.269 Once Anakin has taken sides with Sidious and cut off Mace's hand, Sidious rallies to attack with great vigor, forcing the Master Jedi out the window and to his certain death.

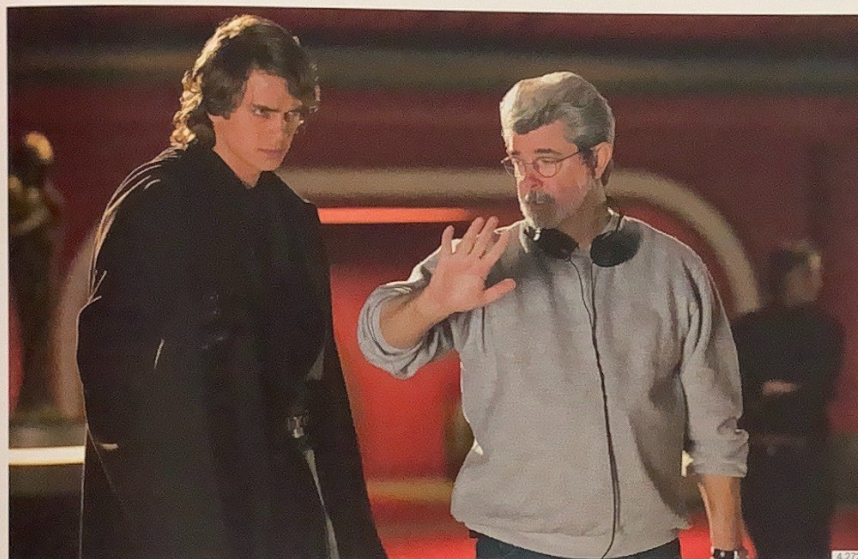




PALPATINE'S ANTE ROOM
WARREN FU 1.16.03
SW3

"You're fulfilling your destiny, Anakin."

Darth Sidious



4.270 Warren Fu's concept art shows Anakin pledging allegiance to Darth Sidious in the anteroom (January 16, 2003).

4.271 Darth Sidious: "Once more the Sith will rule the galaxy, and we will have peace."

4.272 Lucas directs Christensen on how embrace the dark side.

4.273 Final frame of Anakin kneeling before Sidious and learning of his new identity: Darth Vader. Sidious instructs him: "Every single Jedi, including your friend Obi-Wan Kenobi, is now an enemy of the Republic."

Daniel Gregoire We handed ILM our space battle sequence animatics on January 8, 2004. They got Maya files, which they could put into their pipeline and use to do the magic that they do.

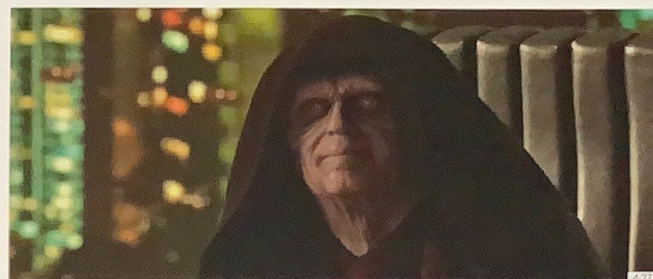
John Knoll This was the most complicated space battle in any Star Wars movie, in terms of numbers of elements and variety of things depicted. It was also a little different. There has been a space battle of some kind in all six pictures, but for the first time, we set a space battle in the upper regions of the atmosphere—in this case, Coruscant's atmosphere. So it was almost in space, but not quite. We used that as an excuse to do smoke, fire, drag, flak bursts, and a lot of other things you can't do in space.

There is a progression in the opening space battle. We start at one place, thread through a bunch of ships, and end up at Grievous's ship at the other end. There was a big master layout done for all the shots showing where all the ships are. Then sequence supervisor Neil Herzinger wrote a tool that created default animation for each ship, which would move all the ships in a given shot along their central axis. Then we'd customize each

shot from there—scoot this ship over a little bit, give this one a little more roll. We also designed a flocking tool to create background space battle action: we defined some paths and said how many of this ship and how many of that ship, and they all flew around autonomously under that tool's control. A lot of that's done to camera: "It's a little empty over here, can you throw some more flocking ships back there?"

We've seen lots of battles between fighters, but we haven't seen what happens when these mile-long ships, vessels the size of Star Destroyers, go at each other. There are dozens of them in this battle.

David Meny / Computer Graphics Supervisor We needed the laser fire to be as automated as possible so, rather than having animators decide how a weapon on a droid was aimed and what it would hit, the TDs choreographed that, and also determined what the laser fire frequencies were and how fast they were moving. All of the ships had templates for where their guns were—on the left, top, or underneath—so the TD could say, "I'm going to be firing from the left half of this ship toward the right half of that ship." They could select those guns and auto-aim them at the other ship or series of ships. In addition, there were procedural rules that allowed the aiming to change within a shot and to vary along the length of the ship. These were all capabilities that we didn't have for Episode II. We could generate particles for explosions, and when those particles hit a proxy geometry of the high-res ship, our tools would randomly determine whether that explosion blew up the ship or left a little scorch mark. That streamlined the space battle and created the impression that there was chaos going on everywhere.



Jonathan Harb / Digital Matte Painting Supervisor The ship finally descends through the cloud cover and you see the Coruscant cityscape below. Some of those establishing shots were so complex a single artist could work on one shot for months.

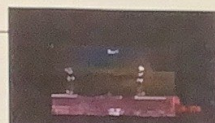
Digital Doubles

Rob Coleman We use digital doubles because some of our key actors—Ian McDiarmid, for example—are not swordsmen. We do a shot with a stuntman made up to look as much like Ian as possible. We use laser technology that scans Ian's entire head and compiles a volume of images inside the computer, which our digital modelers use to create a digital version of Ian McDiarmid. Our painters and matchmovers then get involved. The first thing they do is track where the head was. The blue lines tell us whether our virtual camera—our computer camera—is locked into the real camera that George used on the day we shot. Our painters then get rid of our poor stuntman's head, painting it out frame by frame. My crew gets involved at the same time, animating a performance by using the stuntman's expressions as a guide. We move the digital face so that it is emoting. Finally, the compositors get involved and blend them together. I think that was the most successful digital double we've made yet.

Ian McDiarmid It's even more wonderful for me to see the finished film because I think, "Oh, goodness, did I do that?" And the answer is no.



33



CJE.720/ Sc 99A/ R-4 R4 04:19:47:25 05/25/2004 15:31:09

RESHOOT LS Anakin walks toward cam
 Anakin with clone troops heads for temple
 No dialogue



CJE.730/ Sc 99A/ R-4 R4 04:19:54:00 05/13/2004 17:50:00

RESHOOT Wide, down angle Anakin
 Anakin continues toward temple.
 No dialogue



CJE.740/ Sc 99A/ R-4 R4 04:19:59:15 05/13/2004 17:51:00

RESHOOT low WS Anakin walks toward cam
 Anakin continues toward temple
 No dialogue



MJB.640/ Sc 106-108/ R-4 R4 04:22:12:24 07/28/2004 19:30:33

RESHOOT MU Ki Adi
 Ki Adi waves troopers forward.
 No dialogue.



MJB.110/ Sc 106-108/ R-4 R4 04:22:15:05 06/28/2004 11:33:00

RESHOOT WS Ki Adi
 Ki Adi is blasted by troopers
 No dialogue



CST.010/ Sc 111A/ R-4 R4 04:22:53:05 06/16/2004 17:29:21

RESHOOT FS Anakin and Shaak Ti
 Anakin enters meditation chamber, approaches Shaak Ti
 No dialogue



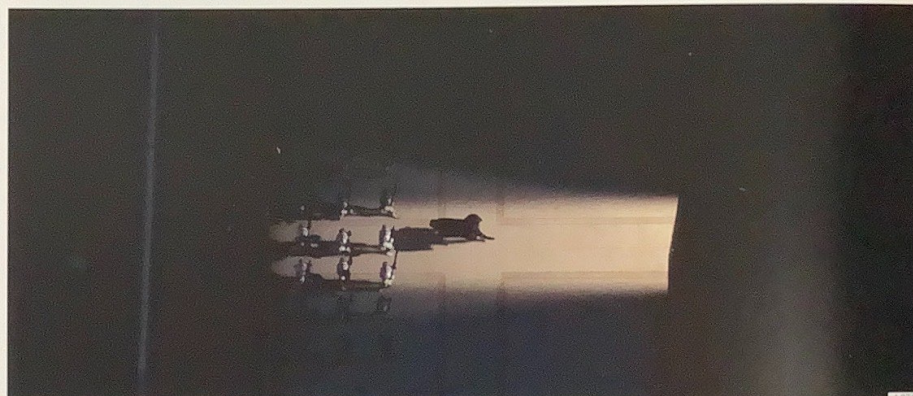
CST.020/ Sc 111A/ R-4 R4 04:22:56:20 06/16/2004 17:30:06

RESHOOT MS Anakin, Shaak Ti
 Anakin walks behind Shaak Ti, kills her with light saber
 No dialogue



CST.030/ Sc 111A/ R-4 R4 04:23:01:25 06/16/2004 17:30:51

RESHOOT high wide Anakin and Shaak Ti
 Shaak Ti lays dead and Anakin exits
 No dialogue





4.274 On July 29, 2004, 42 pages of shots were assembled for the August 2004 shoot. This page shows the execution of Order 66 with Darth Vader heading into the Jedi Temple accompanied by a clone battalion, Ki-Adi-Mundi being blasted by troopers on Mygeeto, and Vader murdering Shaak Ti as she meditates. The assassination of Shaak Ti was filmed but not used.

4.275-276 Final frame of clone troopers marching into the Jedi Temple led by Darth Vader.

4.277 The Jedi younglings have been hiding from the attack on the Jedi Temple and are relieved to see "Master Skywalker," but he slaughters them all. George Lucas: "I had to turn him into a monster. It's a tough story. You can't make a guy evil without having him do evil things."

4.278 Concept art by Erik Tiemens showing Padmé watching events unfold as the Jedi Temple burns (May 29, 2003). The imagery evokes memories of the then-recent 9/11 attacks.

4.279 Final frame showing Padmé distraught by the fall of the Jedi, and the potential loss of Anakin.





Gutsack

Rob Coleman Originally, General Grievous was this super-ruthless vampire, then he became this sniveling horrible creepy little sycophant, and now he's in-between. George made him 7'2" then hunched him over, so he's quite a massive hulking character. For movement guides we studied the original *Nosferatu* (1922), the 1979 remake with Klaus Kinski, and Willem Dafoe in *Shadow of the Vampire* (2000). Grievous has big long cannibal fingers—more Nosferatu than Edward Scissorhands—and does that creepy finger movement when you're not expecting it. His biggest tic is this tubercular cough.

Grievous wears a skull mask, and you can see these sickly puffy creature eyes behind the sockets, as if there's a creature inside, protected behind this bony face. It's a fun acting challenge from our point of view. We have full eyeballs with nictitating membranes, and this greenish puffy skin around them, but otherwise, it's very much a white mask with dark holes for the eyes. That made it interesting to figure out how to emote with this character—no eyebrows, no mouth—and he's got a fair amount of dialogue, too. Behind these protective armor pieces are what looks like this rather disgusting bag of organs filled with beating and slithering things. George calls him the "Gutsack."

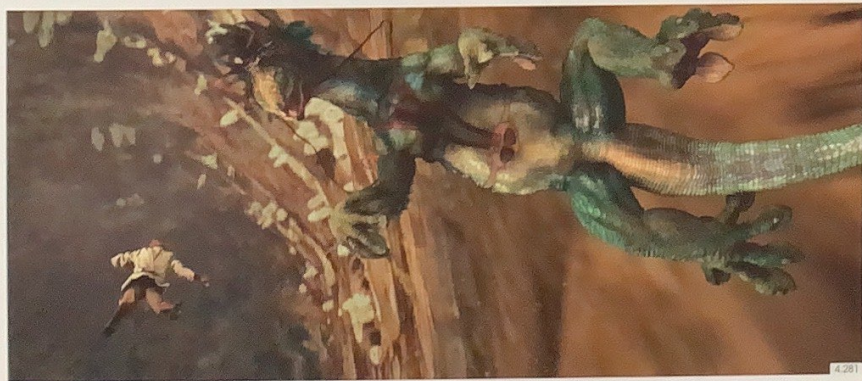
As soon as digital modeling supervisor Pamela Choy started building the Grievous model, we realized there were all kinds of issues with the design. A particular pose can look great in a sculpture, but when you start moving the pieces around, you can find that they

crash into each other, or that the character doesn't have the range of motion he needs. Even though that design had been signed off on by George, we had to go through another design phase in 3-D. It's an inevitable part of the process, but Grievous required more modification than any character we've ever done. We did some test performances to develop the insect-like movements. Then we added in the vampire idea, and even used a temp voice track that sounded very much like Dracula. But George felt that we were going too far down that road, so we pulled back a bit.

Aaron Ferguson / Creature Supervisor Grievous constantly evolved. The animators would rig a part so it was capable of a certain range of motion, then it would have to perform new movement for which it was not designed or rigged.

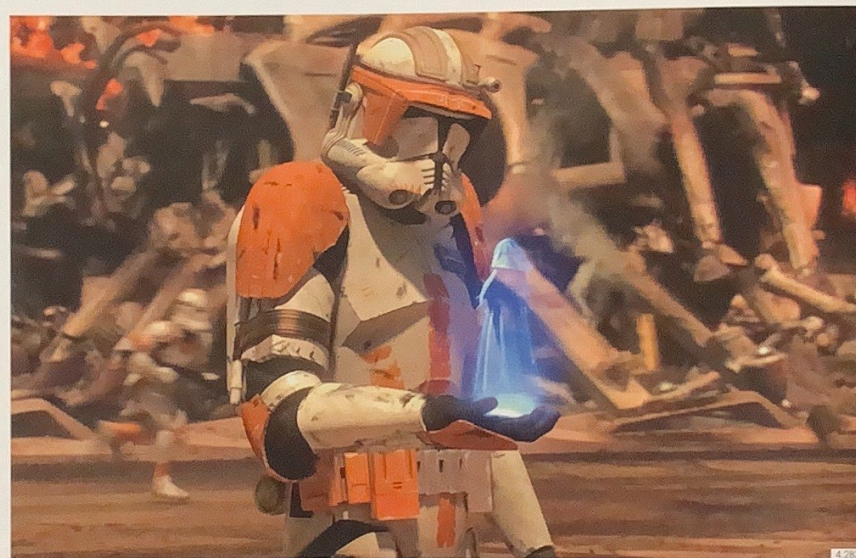
Once Grievous was animation-ready, the team began crafting the walk cycles, which ultimately demanded changes to the model. Even changes in his voice necessitated alterations in his walk cycles and overall character, such as his breathing, posture, and the cadence in his step, forcing us to rework some geometrics, rest positions, or other poses.

Rob Coleman Grievous has two cool fights with Obi-Wan, and I'm pleased with how they've come out, because there's a lot of interaction between the two of them—physically punching, grabbing, and throwing each other. Truth is, if Obi-Wan were fighting someone with four swords, he'd be a goner, because as soon as he blocked two of them, the other two would hit him. Figuring out how to make that work was very difficult, but the animators came up with all kinds of justifications for knocking



"The time has come. Execute Order 66."

Darth Sidious



Grievous a bit off-balance. We had the footage of Obi-Wan's side of the fight, so we knew exactly what frames he would come in on, and we could take Grievous out of phase slightly at that moment. Even George was surprised by how well we got that to play.

The Right Track

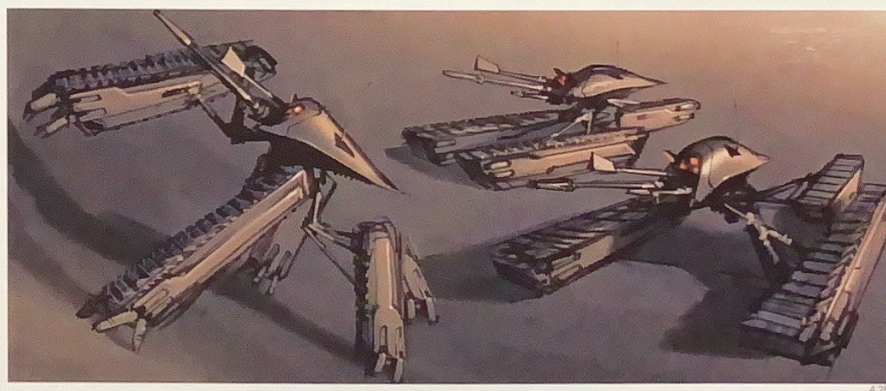
George Lucas / March 9, 2004 The first script I wrote had stories for everybody, and I cut it down and we had a script. But when we cut it together, there were still problems. Finally, I said, "Okay, let's be even more hard-nosed here and take out every scene that doesn't have anything to do with Anakin." But that causes us to juxtapose certain scenes that we were never contemplating juxtaposing before. We were following Padmé and Bail Organa along with Anakin, and then most of her scenes were cut. Suddenly some of the themes grab hold of each other and strengthen themselves in ways that are poetic.

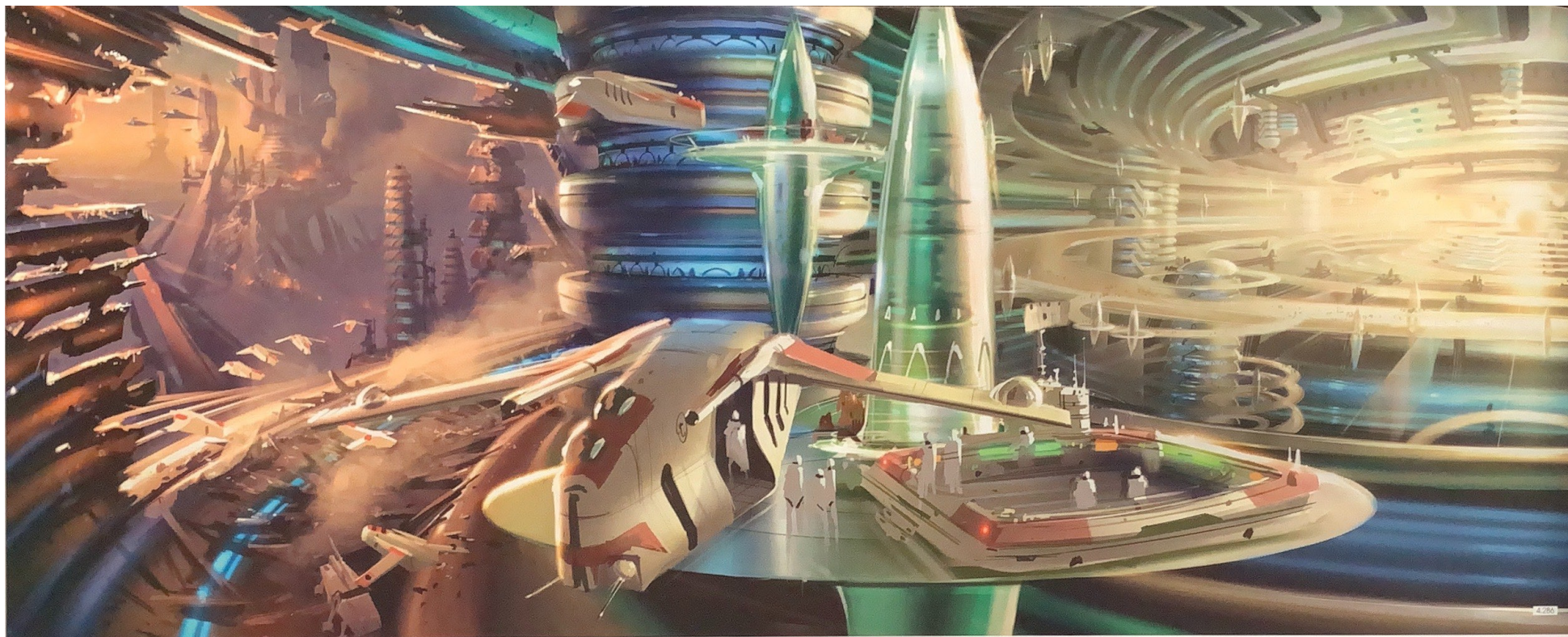
4.280 *Darth Sidious instructs the clones, via hologram, to execute Order 66. This secret code declares the Jedi to be traitors and requires their execution.*

4.281–282 *After Commander Cody receives Order 66, Obi-Wan is attacked, and he and Boga fall to what appears to be their certain deaths.*

4.283 *Although Grievous is dead, the battle still rages between the clone troopers and the droid army as illustrated in Ryan Church's concept art (September 4, 2003).*

4.284–285 *Church's ideas for tank droids, dated June 21 and December 19, 2002. Both designs use treads for traction and feature a transformation concept to become all-terrain vehicles.*





4.286 Visual script art by Ryan Church for scene 106 on Mygeeto, depicting the crystal planet's internal and external environments as the clone troops stage an invasion.

4.287 Church's concept art for an octapillar tri-droid attack (December 6, 2002).

4.288 Church's Mygeeto tri-droid color notes (June 9, 2004). The colors specify the level of damage: green indicates "painted, satin finish," whereas pink shows "scratches, dings."

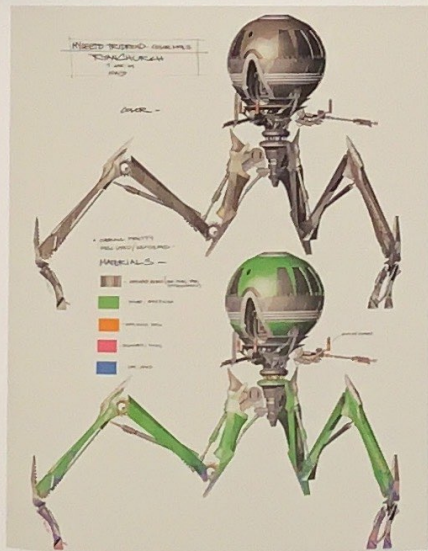
4.289 Final frame showing Ki-Adi-Mundi, who has been battling on Mygeeto, executed by his former clone comrades after the implementation of Order 66.

"The lighting on Mygeeto is very gray and diffuse because there is ash falling, as if there had been a volcanic eruption. There is a big battle in the ash with Ki-Adi-Mundi leading a bunch of troops, who turn on him."

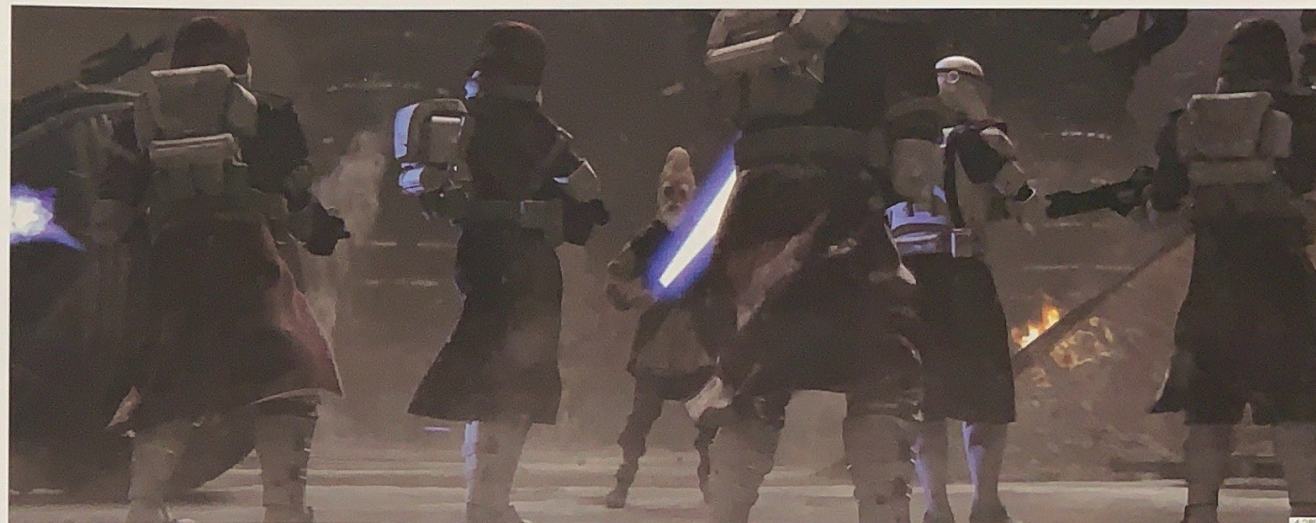
John Knoll

Ben Burtt / April 2, 2004 The opening action sequence in the film—the rescue of Palpatine from the Separatist cruiser by the Jedi—is an hour long. It's half a feature film, from the time they arrived in their spaceships until they get back to Coruscant. I've known for a long time that it's never going to survive as a whole, because it was out of proportion to the rest of the story. So we've cut out two-thirds of it to get the sequence down to a manageable 20 minutes or so. Shaak Ti, the Jedi taken captive by Grievous, is gone. The huge fuel generator sequence is gone. A sequence where the Jedi cross a hangar on the pipes with Palpatine, and R2-D2 rescues them, is gone. The Jedi don't meet General Grievous in the Shaak Ti scene anymore, but later when they're captured and taken to him on the bridge of the ship. There are continuity issues taking out these big chunks—we've solved that as of yesterday by bringing them together in a different way.

There are some serious story issues in the film—Anakin turning to the dark side wasn't satisfying in the last screening. George is brainstorming to fix some of that.



4.288



4.289

Roger Barton / April 4, 2004 After Palpatine reveals himself as a Sith Lord, Anakin goes to tell Mace and the Jedi Council. That was never in the original script; it was never shot. That is a scene that we came up with here, added dialogue to, and this whole sequence is intercut with Obi-Wan in Utapau. So when we come back to Anakin, Mace has already told him he doesn't trust him and he wants him to stay behind while Mace goes to arrest Palpatine. And so Anakin once again feels betrayed and untrusted. We just finished editing a scene where Anakin is reflecting on some of the things that Palpatine said to him in the opera house relating to Darth Plagueis, which was cut out of the movie, knowing that Mace is going to arrest him. Palpatine has been a mentor to him, has treated him very well, and has become a good friend. He also holds the key, most importantly, to the knowledge that will save Padmé. That's very important for us to build in this movie, and I think this sequence goes a long way in helping us get to a believable character arc to take us to the dark side.

This next screening will tell us a lot to see if we're on the right track.

Wild

Rick McCallum Rob wants to direct and I think he would make a great director because performance is all he's concerned about. But he'd never had the experience of dealing with live action; he'd always directed within the computer. George and I gave him the opportunity to shoot Wookiees in Australia.

Rob Coleman The week before the Wookiee shoot I met with George and we went over the Wookiee hero shots.

On May 17 and 18, Rob Coleman directed the Wookiee battle scenes at Fox Studios.

Rob Coleman We shot the preparation for the battle and the battle itself. The most complicated thing about working today is we have to do multiple passes. We've got six actors in costume, but we've got to make it look like there're 50 of them. So we've got a camera in one position. We set all the lads up on one side, and we have them run over a barricade. Camera stays where it is, we move the guys across, mix around the weapons, and shoot

them again. And repeat. Ultimately, these shots will take a week to put together.

They had cooled suits but they still overheat after about 20 minutes and have to take the heads off. To deal with that, I kept rotating them, letting a couple cool off while I shot a couple of others. We had the animatics for 40 Wookiee shots, and we shot all of that stuff. Then, in the last two hours of the last day, we shot some wild stuff—Wookiees cheering, shooting, running, et cetera.

Over the two days Coleman filmed 98 setups, including shots of Temuera Morrison as clones in cockpits for the opening space battle, and the Order 66 montage. Following the shoot, Coleman supervised the animation process at ILM.

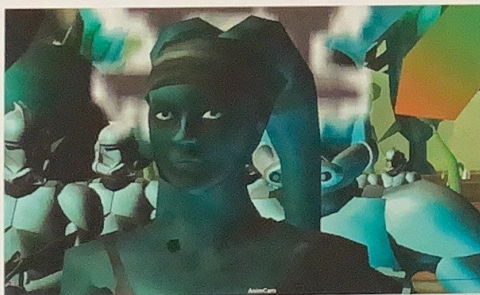
Rob Coleman When you see the group of Wookiees jump up and cheer, the first few rows are real performers from my little group of six Wookiees, which I shot over and over again. We were on a big Technocrane, and the crane operator did a fantastic job of eyeballing that move. Then back here, Jason Snell

“One of the problems in computer graphics is that if you create an army of clones from the same model, it looks like a CG trick. The thought was that the clones would individualize themselves—like the soldiers in Vietnam who would write things on their helmets and wear patches on their uniforms. So we decided to add different armor and weaponry and coloring.”

Rob Coleman



4.290



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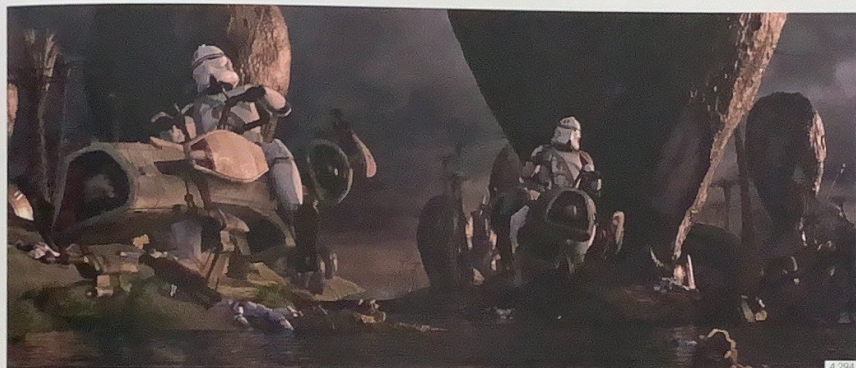
- 4.290 Ryan Church's concept artwork for a walker on Felucia (October 17, 2002).
- 4.291 Animatic for Aayla Secura as she leads clone troops on Felucia. The clones shoot her in the back.
- 4.292 Final frame of the planet Felucia.
- 4.293 This intricate miniature of the Felucian forest landscape, made by Richard Miller and Danny Wagner, was photographed for the digital model.
- 4.294 Final frame of clone troopers on speeders flying through the landscape of Saleucami.
- 4.295 John Knoll instructs Nina Fallon, playing Jedi Master Stass Allie, how to ride a green screen speeder.
- 4.296 Visual script art for scene 109c by Church showing the clone troopers dropping back and about to kill their Jedi compatriot. In the original script this took place on Felucia and Adi Gallia was the Jedi killed. However, the action was moved to Saleucami and Stass Allie was ambushed.
- 4.297 Felucia concept by Alex Jaeger that was used for Saleucami (November 22, 2002).

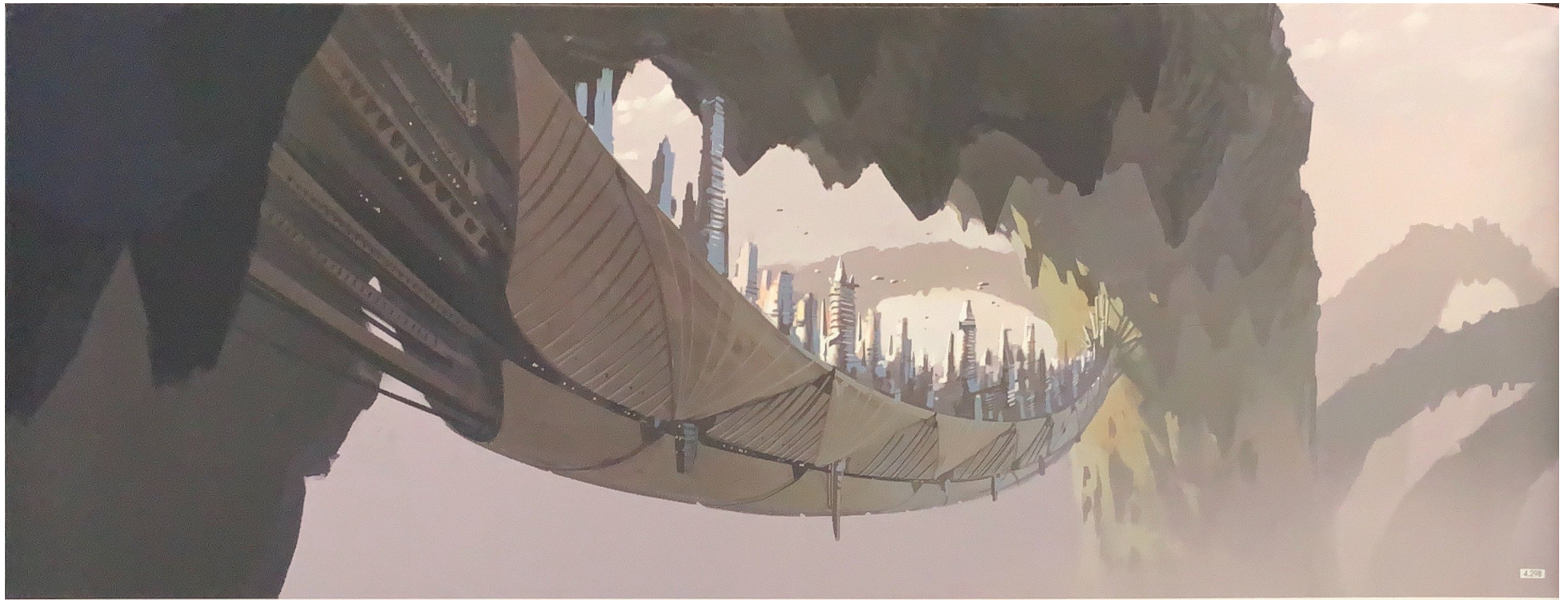


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and his matchmove group, and Brian Cantwell and the layout group, took all of that footage and corner-pinned it so that it looked like it had been generated from one camera—when in fact it was probably eight passes, with a wild camera on a wild Technocrane.

George wanted lots of Wookiees. We had two rows of real Wookiees, so we had to create digital Wookiees, and have them all running out to battle together—we used motion capture for that. Having one of the real seven-foot-tall Wookiee performers do the motion capture work was super valuable. That extra foot makes their strides different and their weight transfer different. So we got the biggest guy from the original shoot and put him in an XXXXL motion capture suit. And because it was the same guy, everything he'd done in Sydney came across the same on the mo-cap stage.

Ben Burtt/Sound Design We brought out some recordings I'd done of bears at zoos for *The Star Wars Holiday Special* (1978), which had a Wookiee family. We blended those with a lot of dogs, coyotes, and a few large cats yelping and barking to create high and low voices, screaming, and crying. That way, we could make hundreds, thousands of Wookiees charging camera, like in *Braveheart*, all barking and yelping as they come.

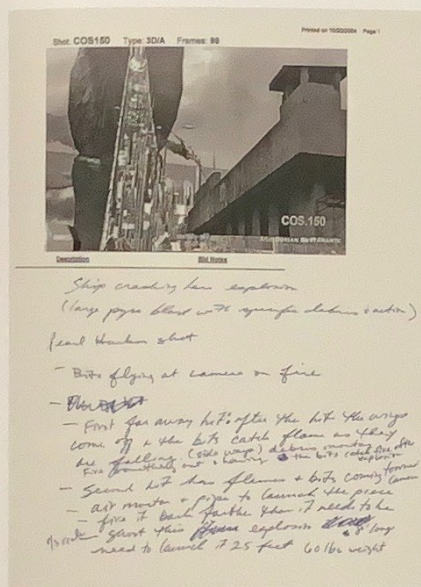
On July 28 and 29, Peter Mayhew (Chewbacca) and Michael Kingma (Tarfu) were filmed against a green screen at ILM for their scenes with Yoda.

Peter Mayhew I think the mere fact that not many characters from the original trilogy have come back and me being one of them is a remarkable situation. I haven't worn the costume

for 14 years. Get in, put it on, Chewie becomes a character again.

Dave Elsey You are hard pushed to fault what Stuart Freeborn did on the original movies with Chewbacca. It's one of the most convincing creatures ever—he's in the movie so much and you never question it. But when the head is at rest and Peter Mayhew isn't moving his face around, nothing moves, because Peter needed to open and close his jaw to operate Chewie's face. I thought perhaps we should put an override system in there whereby we can put some very subtle servo movements into the lips to keep it alive on screen.

George Lucas Peter Mayhew is Chewbacca. It's very unique the way he has created the character. The way he walks, and the way he tilts his head, the way he looks, the way he uses his eyes. You know it's Peter.



4.302

4.298 Ryan Church's establishing shot for Cato Neimoidia, where the cities are suspended between the planet's rock formations.

4.299–300 Dorian Bustamante's digital storyboards showing the attack on Cato Neimoidia (June 17 and 22, 2004).

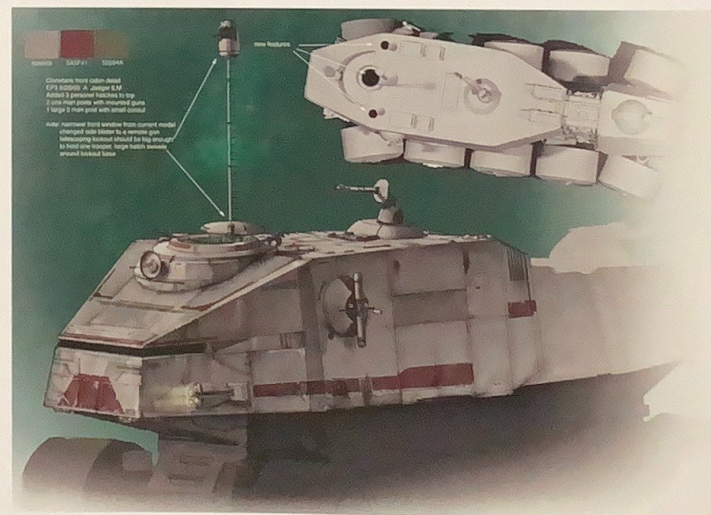
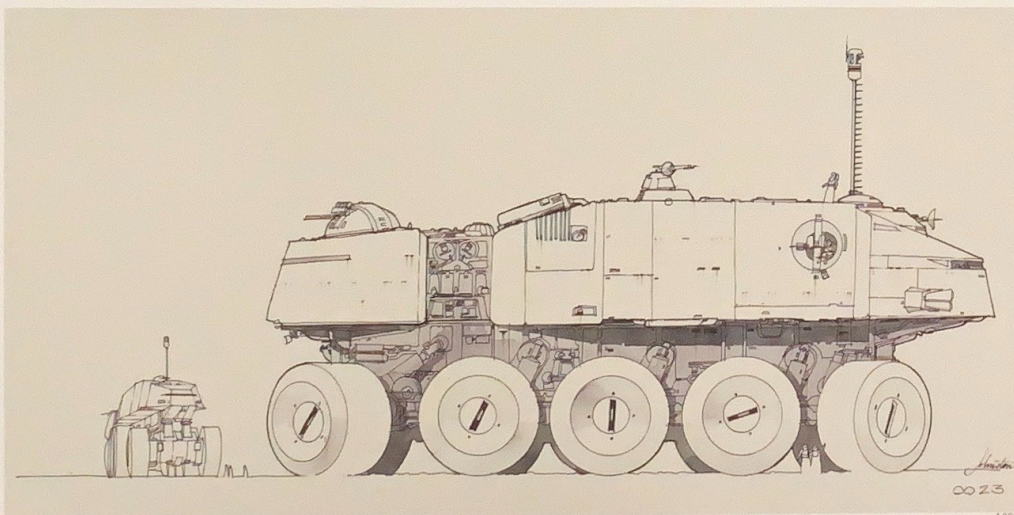
4.301 This final frame shows the point of view from a clone starfighter as they attack the bridge world. Ahead is Plo Koon in his Jedi starfighter.

4.302 Pyrotechnic notes for shot COS 150 showing Plo Koon's crash (July 7, 2004). This is described as the Pearl Harbor shot and specifies in great detail the nature of the explosion as well as the debris resulting from it.

4.303 Visual script art for scene 107 by Church showing the clone fighters firing upon Plo Koon's Jedi starfighter after receiving Order 66.



4.303





4.308

4.304 Visual script art for scene 110a by Church showing the Wookiees and clone troopers fighting the droid army on Kashyyyk.

4.305 Joe Johnston's design for a tank for the Battle of Hoth sequence in Episode V was not used, but it was resurrected and evolved to become the clone tank in Episode III.

4.306 Alex Jaeger added refinements and details to the clone tank (August 25, 2003).

4.307 Digital storyboard by Eric Carney for shot KOS 160 showing Yoda among dead clone troopers after defending himself from their attack (February 19, 2004). In the shooting script the scene is longer, with Yoda defeating many more clones, and it ends with Commander Neyo firing at the command center from a tank.

4.308 Final frame of the clone tank in the midst of battle.

4.309 Yoda, having felt a great disturbance in the Force upon the deaths of so many Jedi comrades, successfully defends himself against an attack.

4.310 Obi-Wan survives the fall into the lagoon at the bottom of the sinkhole, and a sequence was conceived by the design team for his long climb back to the surface. This Erik Tiemens's concept shows artwork for the small cave halfway up his climb (February 5, 2003).

4.311 Feng Zhu's concept shows Obi-Wan illuminate the small tunnel with his lightsaber (January 29, 2003).

4.312 These Iain McCaig storyboards depict Obi-Wan seeing his former Master Qui-Gon Jinn as a Force ghost in the grotto chamber. When George Lucas was shown these ideas, he said: "We never see the ghost of Qui-Gon; he's not that accomplished. He's able to retain his personality, but he's not able to become a corporeal ghost."

4.313 Tiemens's proposal for Obi-Wan's journey back to the surface: Obi-Wan dives underwater to get into the large grotto chamber, climbs up the rock face, crawls through the small tunnel, and in the small cave grabs hanging vines to pull himself up to safety (February 5, 2003).

Unpleasant and Dangerous

Roger Guyett was appointed visual effects supervisor on August 3, 2004, to help complete ILM's work on schedule and was given responsibility for the Kashyyyk and Mustafar sequences.

Roger Guyett Our unit got approximately 650 shots. John Knoll handed what information he had about the sequences to me when I joined the show. Obviously, that's a fairly daunting moment because you think, "My God, what have you got yourself into?"

Greg Hyman / Visual Effects Editor Mustafar is a combination of matte paintings, miniature work, CG lava, digital doubles—it has all sorts of things going on. But a lot of the environment was created using some miniatures, and we put those together digitally.

Roger Guyett The whole mountainous environment is basically three 25-foot miniatures which take you down Mustafar's main volcanic river (upper river and waterfall models), plus there's a larger-scale beach miniature that Obi-Wan and Anakin end up fighting on. We've added a lot of CG stuff but the miniatures did a lot of the work for us.



4.307

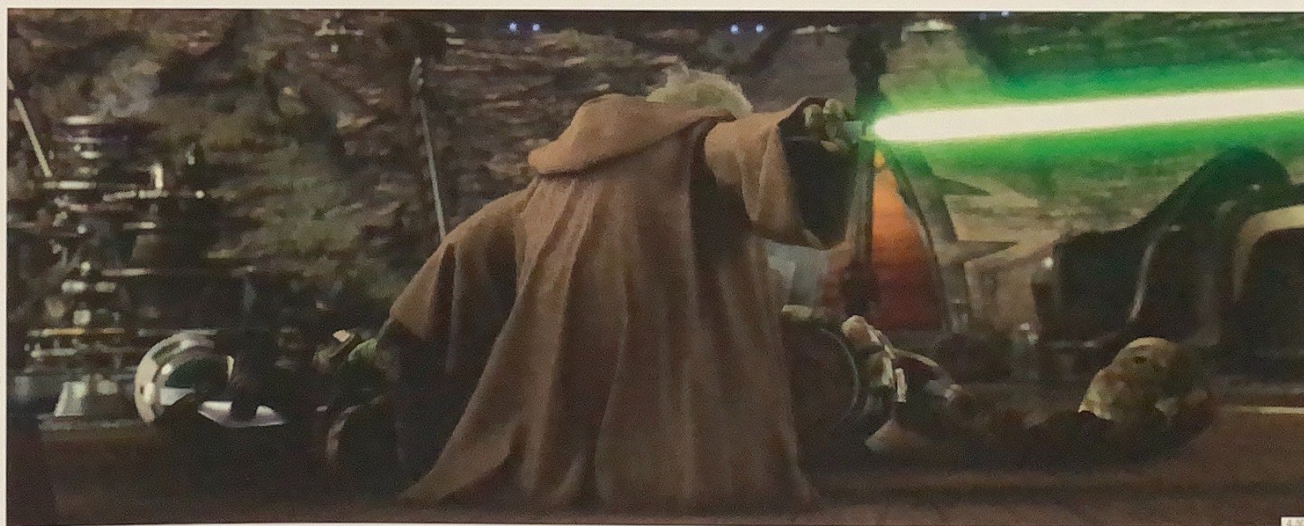
Shooting commenced on the Mustafar lava river model on August 16.

Willi Geiger / Digital Sequence Supervisor Brian Gernand and his team made a beautiful 1:132-scale model of the lava river valley on Mustafar.

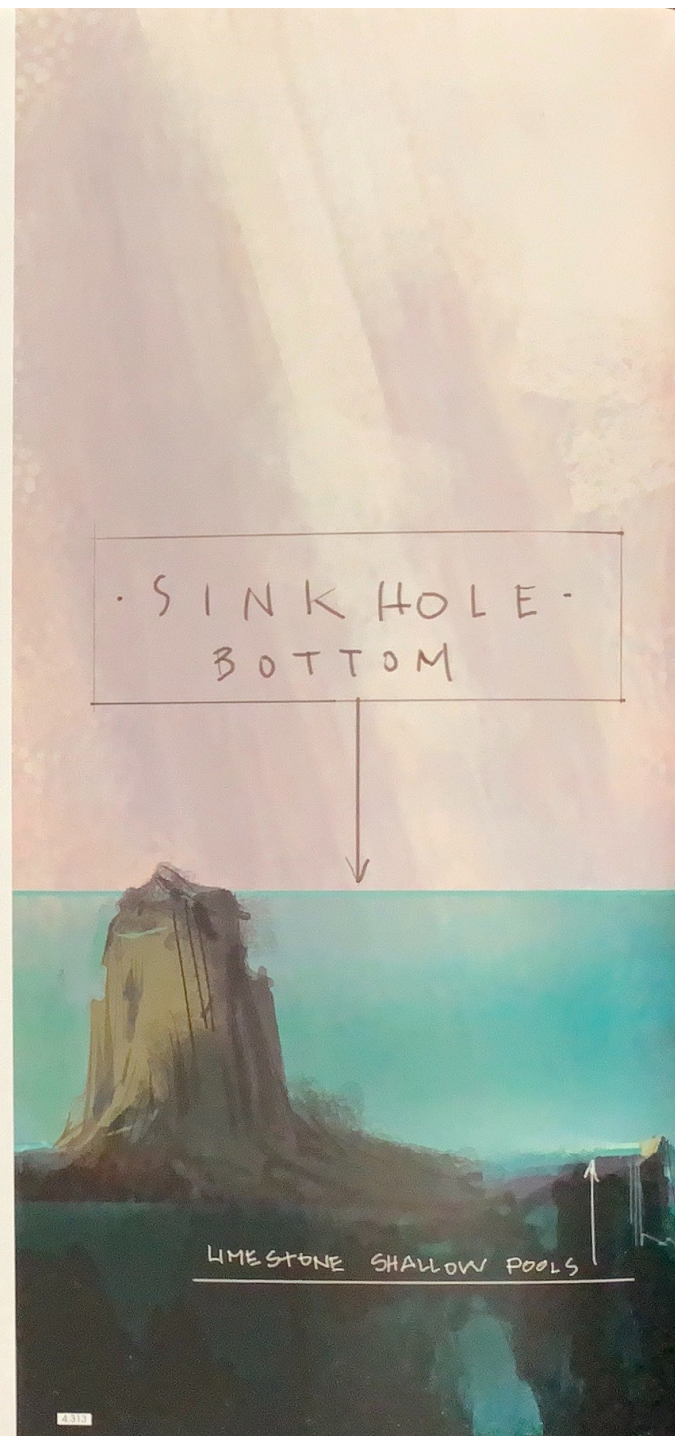
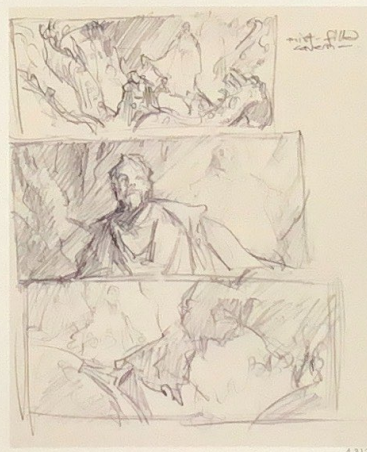
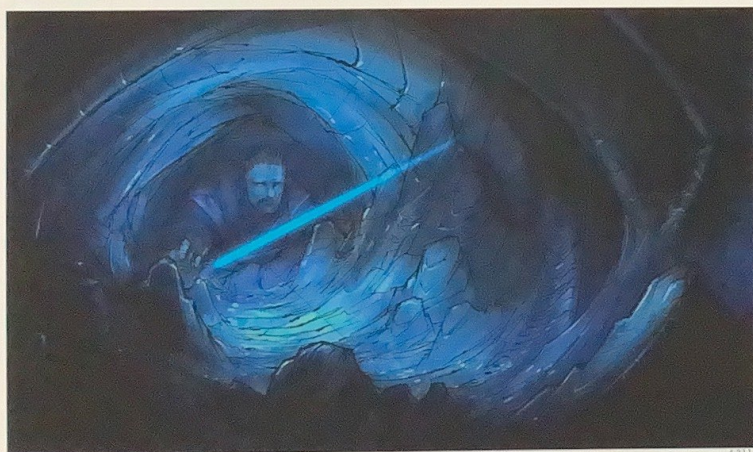
Roger Guyett We used methocel, a food additive, for the lava river, colored it, and lit it from underneath the Perspex base, because lava emits light.

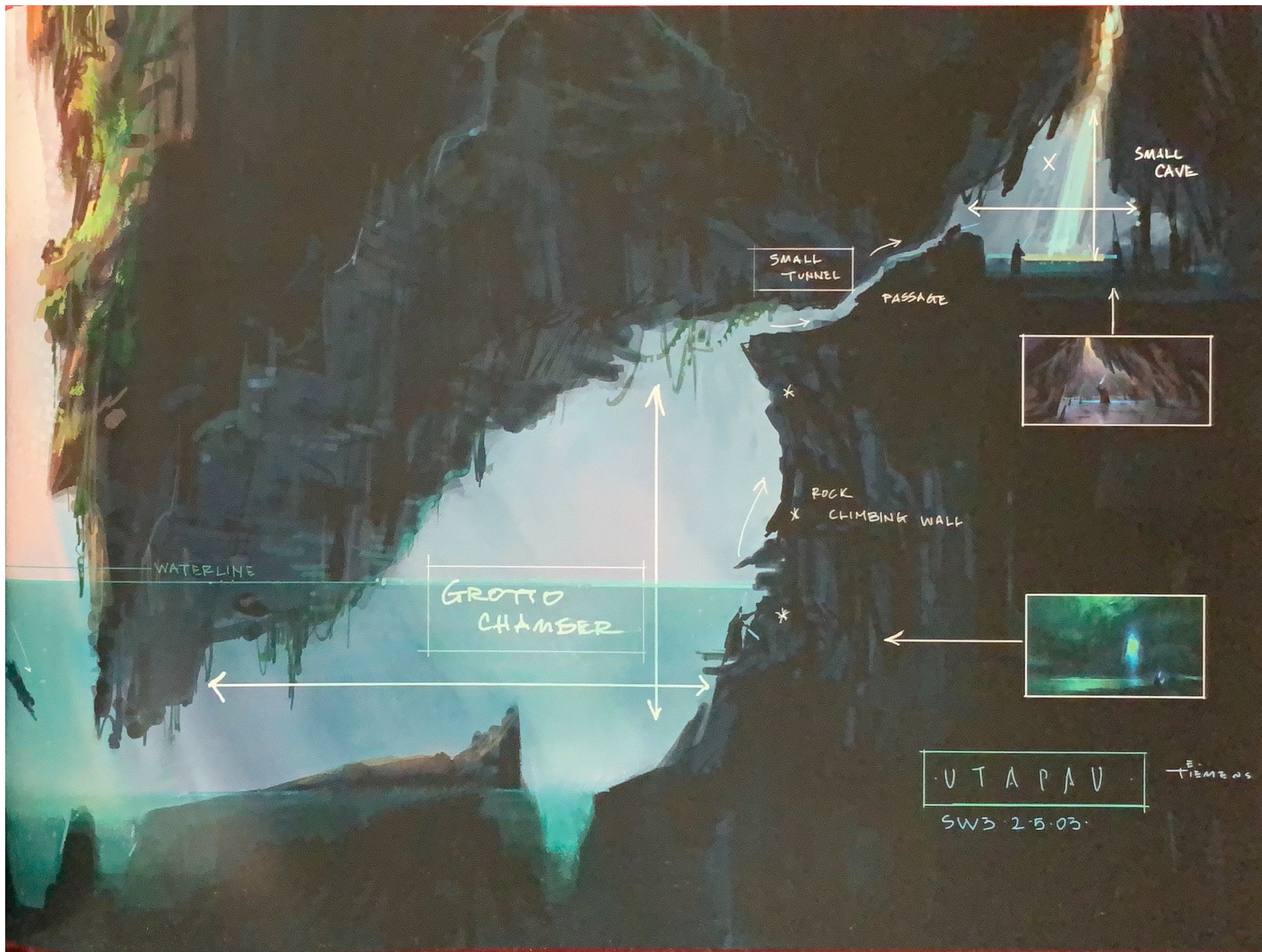
Willi Geiger They poured the gloopy methocel into the top of the model, sprinkled burnt cork on as they poured, and if they got it just right with the lighting underneath, it looked like a flowing river of lava. That was the starting point for pretty much every shot.

Brian Gernand / Practical Model Supervisor In real life, cooling lava is a bright orange, while hotter lava is bright yellow. We designed our sets so that the lava would flow at different depths. When the methocel moved into the deeper areas, it magically turned a burnt orange because of the volume. When it was out in the edges, where it was more shallow, it was thinner and bright yellow. We learned that the crust was the most important thing



4.309







- 4.314 This visual script art by Ryan Church and others for scene 120a shows Obi-Wan evading seeker droids sent to confirm his demise.
- 4.315 A number of ideas were proposed to add to the drama of Obi-Wan's predicament, including Obi-Wan fighting a cave monster, as per Iain McCaig's concept (January 28, 2003).
- 4.316 Song Jun Lee's concept for a cave monster attacking Obi-Wan (February 21, 2003).
- 4.317 Michael Marnane's concept for the cave dwelling Nos (July 9, 2003).
- 4.318 As scripted, Obi-Wan climbs up the side of the rock and clings close to a cave as seeker droids approach. Suddenly, a nos creature jumps out of the cave and devours one of the droids, giving Obi-Wan the opportunity to enter the cave and make his escape. Here George Lucas (foreground, left) watches on monitors as Ewan McGregor climbs up to the cave entrance. In the final cut, Obi-Wan is seen evading detection by the seeker droids.





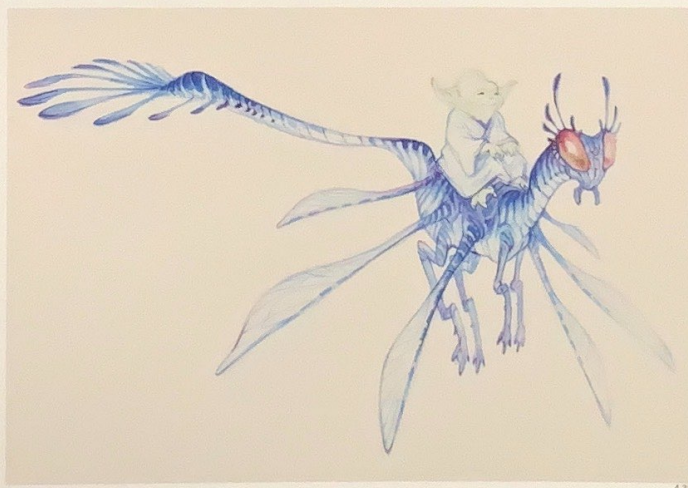


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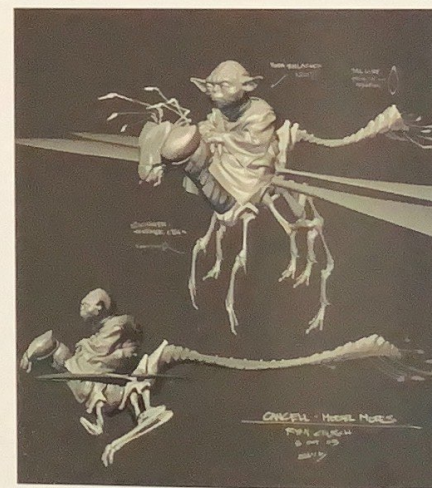


KVL Yoda Mud Mask
EP3 2.11.04
A. McBride

4.320



4.321



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4.319 Ryan Church's concept shows Yoda being pursued by clone troopers on Kashyyyk, the searchlight from the Republic scout walker revealing his location (June 13, 2003).

4.320 As scripted, the scout walkers find a dead Wookiee in a cutamara; a crazy little creature covered in mud surprises the clones, distracts them with a Jedi mind trick, and Chewbacca dispatches them. This is Aaron McBride's concept for Yoda disguising himself with mud (February 11, 2004). In the movie the scout walkers find the abandoned cutamara and continue their search.

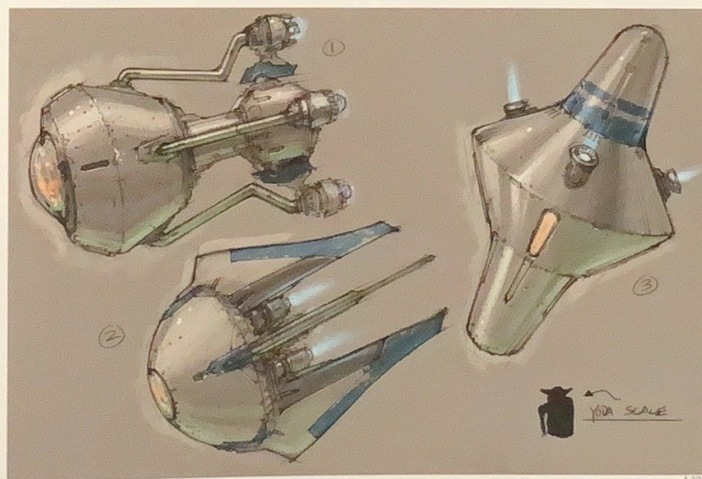
4.321 In the shooting script, Yoda hails a can-cell and rides it to the hidden escape pod. This is Derek Thompson's can-cell concept (June 12, 2003).

4.322 Church's notes for the can-cell 3-D digital model asks for sleeker, skinnier legs and for Yoda to be enlarged 120 percent (October 5, 2003).

4.323 This visual script art by Church for scene 122 depicts Yoda's escape pod on Kashyyyk.

4.324 Feng Zhu's concepts for Yoda's escape pod, with Yoda shown for scale (June 6, 2003).

4.325 Digital storyboard for shot KYE 070 showing Yoda's arrival at the escape pod on a can-cell (June 19, 2004). The can-cell was not used in this sequence but was used in the establishing shot of Kashyyyk.



4.324

Shot: KYE070 Type: 3D/A Frames: 276



4.325

“There is a new order.”

Darth Vader



in making the lava look realistic. We added a binder to it to make crust pieces clump together at the bottom of the set, bunching up around pinnacles and into corners—just as it does on real lava as the movement slows.

Roger Guyett I'm looking at this sequence thinking, "How do I make that background plate feel unpleasant and dangerous?" Volcanoes have fireballs and molten lava exploding on the surface—that's our arsenal that makes that world exciting. The complex, all the mechanics with its moving arms that dip into the lava, was entirely CG. We also did a lot of simulations, hitting these structures with big forces inside the computer so the ganties they're fighting on are moving around.

Willi Geiger There were around 20 CG elements in a typical shot. We populated the shots with glops and spurts to add detail and give the environment scale, but we mainly used the CG for stuff we couldn't get from the model.

Patrick Tubach / Digital Compositing Supervisor And we put in a ton of actual volcano events shot by Ron Fricke at Mount Etna in Italy.

Unlimited Power

Lucas filmed reshoots over 11 days from August 23 to September 3, 2004, at Shepperton Studios in London. The majority of the first day was spent on reshooting much of scene 94 in the Chancellor's Office. Scene 89 has been deleted, so Anakin arrives to give the Chancellor the news that Obi-Wan has engaged in battle with General Grievous. Palpatine continues his seduction of Anakin, continues sowing distrust in the motives of the Jedi, and leads into the revelation that he is a Sith Lord.

On August 24, Natalie Portman and Hayden Christensen film a new scene, 53A, at Padmé's apartment, before Anakin has his prescient nightmare that his wife will die. This short, sweet, loving scene is the last time that the couple will laugh together.

On August 26, Obi-Wan and Vader are on Mustafar at the volcano's edge, filming the denouement of their battle, when Obi-Wan says: "It's over, Anakin. I have the high ground. Don't try it."

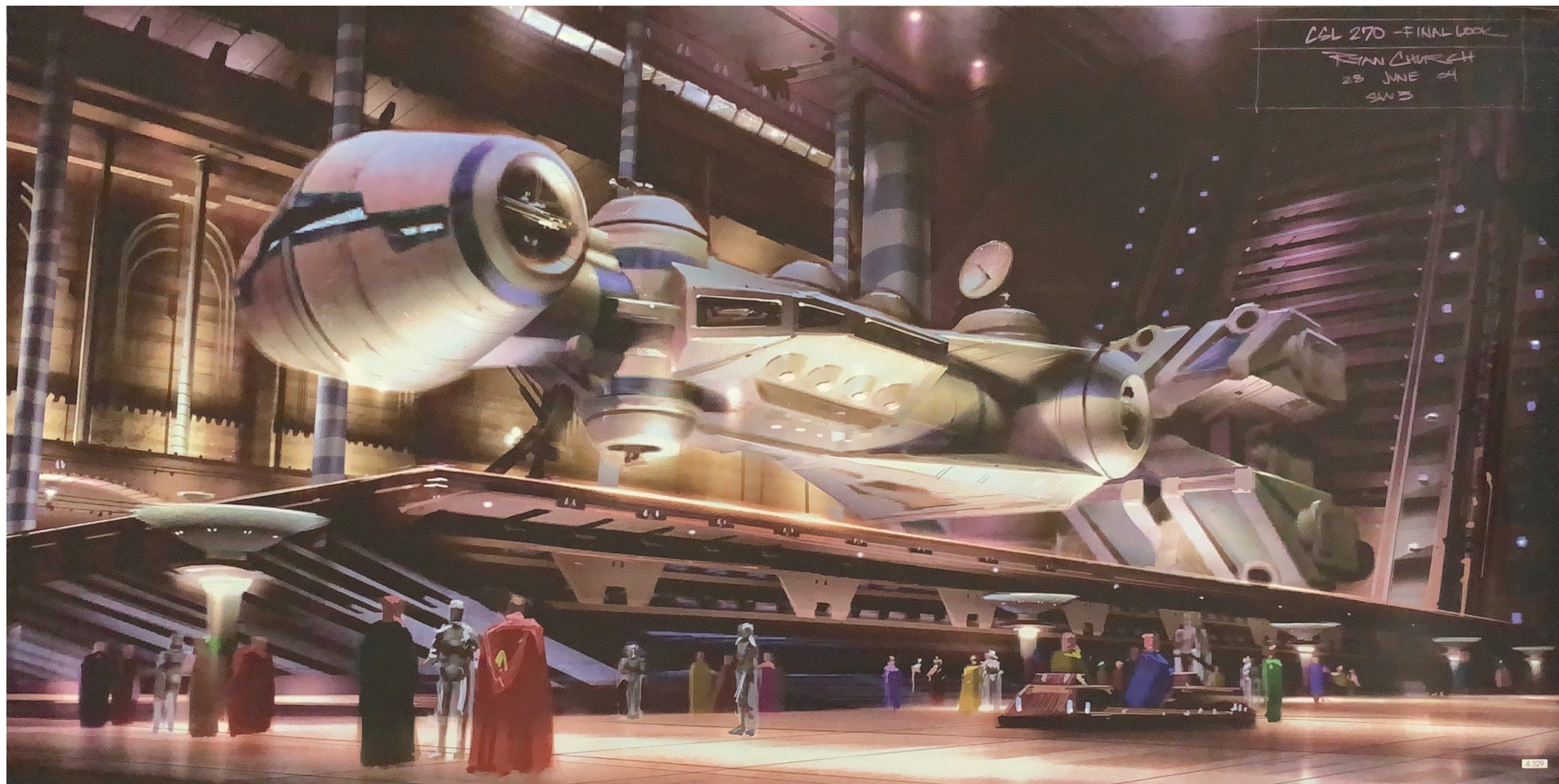
On August 27 and 28, Lucas shot a revised version of scene 99—the confrontation between Mace Windu and Palpatine, and Anakin deciding to stop Mace from killing Palpatine.

George Lucas The fight itself was fine. The problem was that the final confrontation between Mace and Palpatine wasn't specific enough in terms of Anakin so we're working to make his conflict sharper. The audience knows Anakin is going to turn to the dark side, but the things



- 4.326 Natalie Portman and Hayden Christensen filming the scene where Darth Vader, following the orders of Darth Sidious, is about to leave for Mustafar to kill the Separatists and end the war. He tells her: "You need to distance yourself from your friends in the Senate. The Chancellor said that they will be dealt with when this conflict is over."
- 4.327 Erik Tiemens's concept for Padmé and Darth Vader's farewell embrace before he leaves for Mustafar (May 24, 2003). C-3PO and R2-D2 remain in the background, unwitting witnesses to the great shifts in power in the galaxy.
- 4.328 Final frame showing Padmé and Darth Vader's embrace. Like a Greek chorus the droids reflect what the audience are thinking and feeling: at the end C-3PO says, "I feel so helpless."





that he's struggling with are so subtle that it may be hard for people to understand why his obsession to hold on to Padmé is so strong.

The scene begins with Mace demanding that the Chancellor end the war and relinquish his emergency powers. Anakin enters at the end of the fight. When Mace decides to kill Sidious, echoing Anakin's decision to kill Dooku at the beginning of the movie, Anakin stops Mace for the chance of saving Padmé. The dialogue and staging makes the reason for his actions explicit. Sidious then kills Mace exclaiming, "Unlimited power!"

A new scene, 85C, was shot on August 30, set in the Jedi landing platform. This is where Anakin reports to Mace that Palpatine knows how to use the dark side of the Force and is probably the Sith Lord they have been looking for.

On September 1 and 2, the end of scene 99, where Anakin Skywalker becomes Darth Vader, was reshot. In total, 469 setups were made over the 11 days.

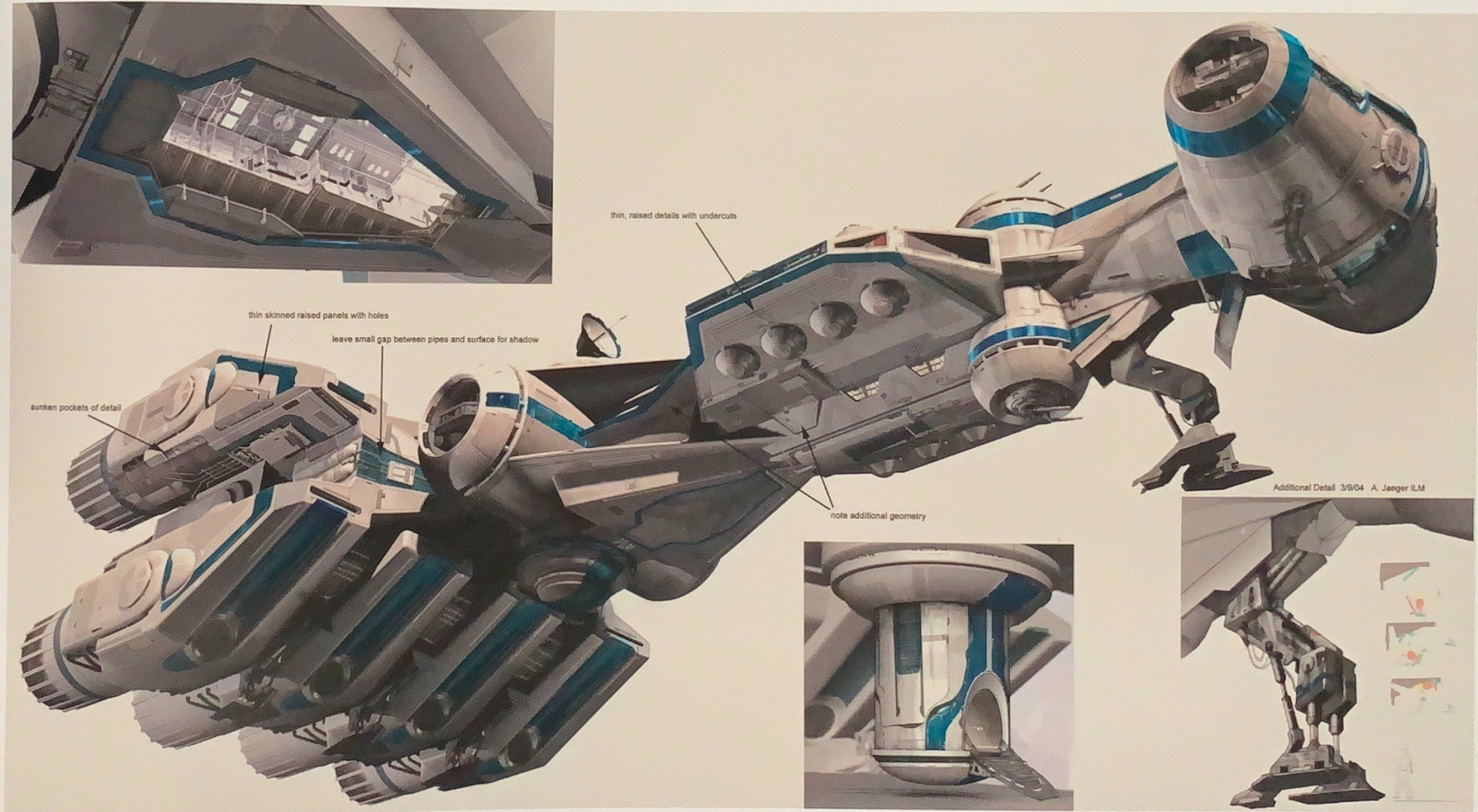
4.329 Ryan Church's concept art for scene CSL 270, where Bail Organa boards his ship, the Alderaan cruiser, also known as the Blockade Runner, at the Senate underground landing platform and leaves Coruscant with a Jedi homing beacon (June 28, 2004). The scene was cut.

4.330 Yoda, Obi-Wan, and Bail Organa (Jimmy Smits) meet aboard the Blockade Runner in this final frame. They decide that they should return to the Jedi Temple to switch off the coded signal luring all Jedi back to Coruscant and to their death, and to learn more about the recent horrific events. The interior of the ship is a recreation of the corridor designed by Ralph McQuarrie in 1975 and seen in the opening scene of Episode IV.

4.331 Alex Jaeger added detailing to the Alderaan cruiser (March 9, 2004). Top left shows the hangar bay doors opening, bottom center shows the personnel entry/exit pod that lowers, and bottom right shows how the front landing leg folds into the ship when in flight.

*"In a dark place we find ourselves...
a little knowledge might light our way."*

Yoda





4.332 Erik Tiemens's concept for a Republic assault ship attacking the volcanic planet Mustafar during the Clone Wars, before any details of events on Mustafar had been fleshed out (June 17, 2002).

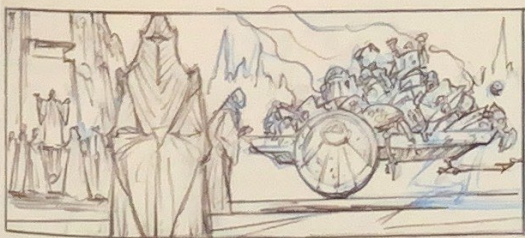
4.333 Tiemens's concept for Mustafar's volcanic geography shows that it is a very hostile environment (June 1, 2002).

4.334 Iain McCaig drew Mustafar as a droid wasteland overseen by a strange sect (December 4, 2002).

4.335 Ryan Church's concept shows a Republic assault ship crashing onto Mustafar (July 25, 2002). Many ideas were investigated as the story and script developed.



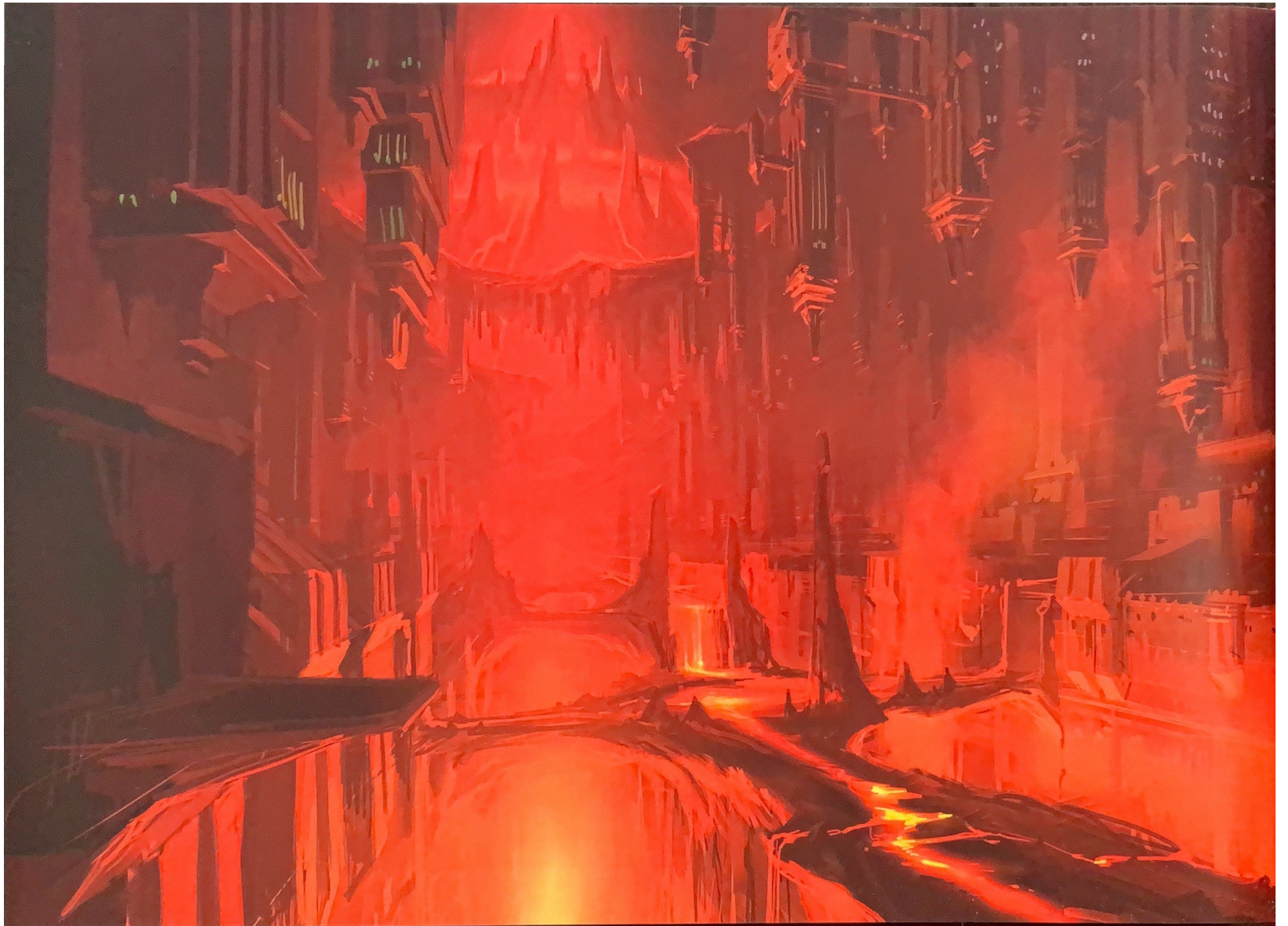
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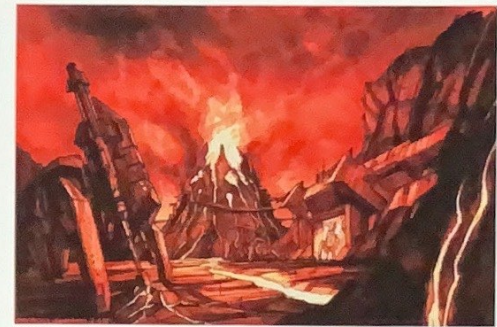


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4.336 Church's concept for the lava mine installation is one of many that explore the industrialization of the planet (June 1, 2002). The buildings hanging down from the ceiling give a sense of scale to the cavernous mining chamber.

4.337 Warren Fu's concept art for mining droids emerging from a building to drill for lava (October 18, 2002).

4.338 Church's concept for a crane device on Mustafar (October 4, 2003).

4.339 Early concept art by Church for a Mustafarian shipping zone.

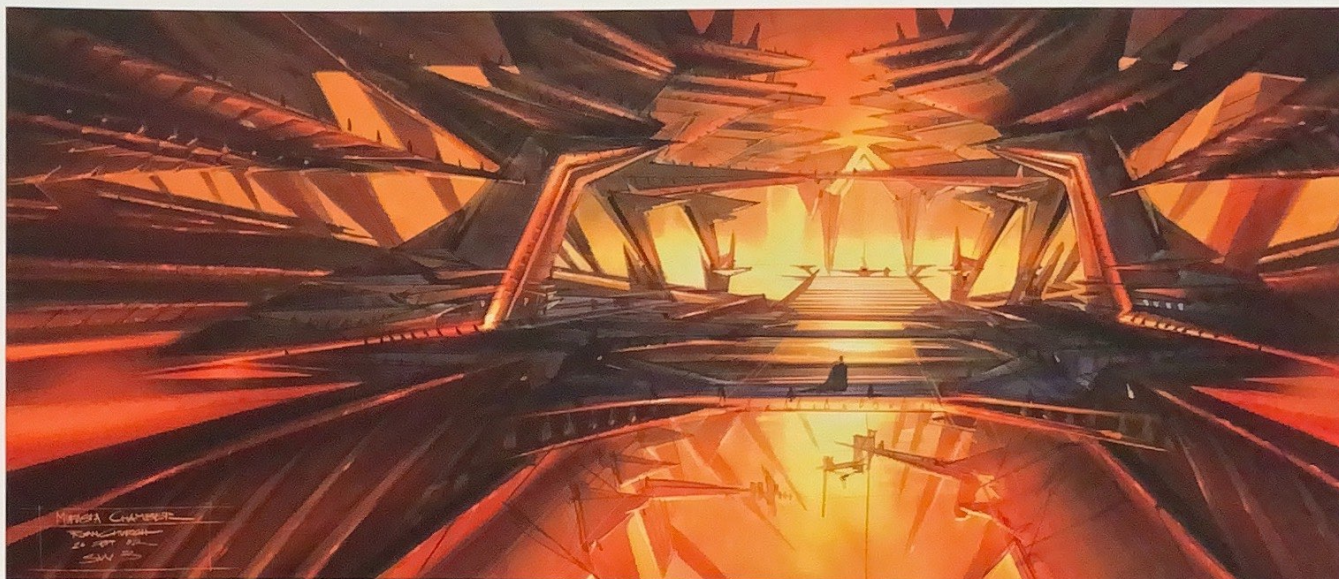


"Mustafar's been around a long time. I've always had this set piece: the end between Obi-Wan and Anakin. I knew that's where this movie was going to end up. It's all this volcanic lava shooting up. So it's almost monochromatic in its red-and-blackness. I've had that image with me for a long time."

George Lucas



4.341



4.343



4.342

John Knoll We were shooting lots of little bits and pieces. There were almost no meaty scenes. It was "I need you to walk out, stop, look to your left and right, and then walk forward." I commented about that to George and he said, "This is one of my favorite parts because I'm getting all these pieces that fill the holes. I've been looking at these scenes for a year now, and it's like driving down a road with these big potholes and you get to fill them in, and now it's nice and smooth."

A Good Intention

Natalie Portman Some people think bad people were always bad. They had this tendency toward aggression and control and power from the beginning. I think the most interesting thing about George's theory of morality is that evil comes out of a good intention from a good person.

4.340 This Ryan Church concept shows a Star Destroyer docking top left and collection panels overhanging the lava at right (October 3, 2002).

4.341 Derek Thompson's unused design for a Mustafarian (June 12, 2003).

4.342 Final frame showing Mustafarians on a platform floating above the lava field undertaking the mining process. This image foreshadows the imminent duel that will take place between Darth Vader and Obi-Wan.

4.343 In Church's concept for a Mustafar mining chamber a cloaked figure walking across a bridge gives a sense of scale (September 26, 2002).



4.344

this power that will allow me to save the person I want to hang on to."

Ultimately, it's about power. He's traded his soul for power. It's *Faust*. The more power he wants, and the more power he gets, the more he loses. The Devil says, "You can become more powerful but you must pass this first test. The first test is you must kill your mother. The second test: you have to kill your wife. And the third test: you have to kill your best friend." In the end you have all this power but you have nobody to share it with, except some wizened old man who's even more evil than you are.

If you're going to sell your soul to save somebody you love, that's, as we say in the film, unnatural. You have to accept the natural course of life. Death is obviously the biggest of them all. Not only death for yourself but death for the things you care about.

Paul Duncan After the suit has been put on, Vader emerges and starts crushing everything around him. Why does he not revolt against Darth Sidious?

4.344 Erik Tiemens's bird's-eye view of the topography of the mining installation with cameras indicating the progress of the action (November 11, 2004). The duel between Vader and Obi-Wan begins inside the complex at right, then moves out to the collection panels. The panels fall down into the lava river, and just before they go over the falls the combatants jump onto droid platforms, ending up where Vader burns on a beach. Darth Sidious arrives at the landing platform at far right and collects the broken Vader.

4.345 Final frame showing the Mustafar landing platform, the mining complex, and the lava collection panels.

4.346 Aaron McBride's concept for the Mustafar landing platform and mining installation (May 27, 2004).

George Lucas Anakin wants to have a family. He wants to be married to Padmé and have children. When he sees in his dreams that Padmé is going to die, he doesn't know how, but it's pre-ordained. He's in love with her. He doesn't want her to die. He wants to possess her, to control that. He keeps getting himself deeper and deeper into this pickle.

He wants a family but at the same time he knows he can't have one. Now the greed has taken over and the fear of losing his wife and baby. The whole point is you can't possess somebody because they are their own person. You can't dominate and make them do everything you want them to do.

Paul Duncan He had dreams about his mother as well, and he could not save her.

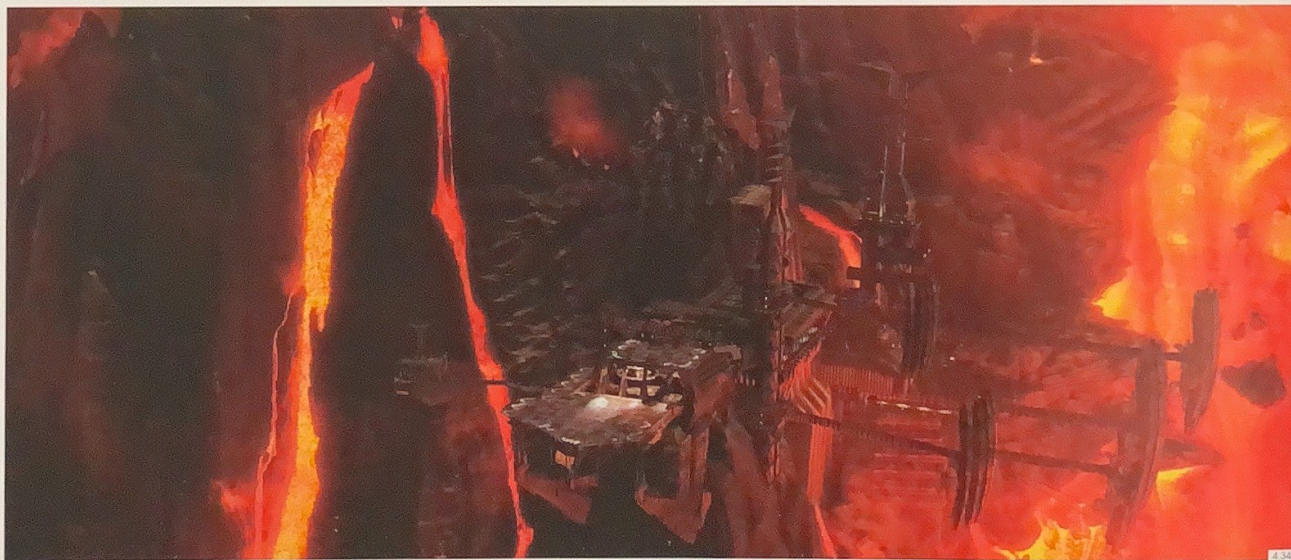
George Lucas Right. He's walking into a death trap. And there's no way out.

Paul Duncan Palpatine has been grooming him by saying how powerful he is.

George Lucas And also saying that "My mentor told me that there was a way that you could stop death." Which was a lie. They can't. Anakin got sold a bill of goods because he wanted it so bad that he'd believe anything anybody would sell him.

Paul Duncan Palpatine's a snake oil salesman.

George Lucas It's a scam. Anakin's made a pact with the Devil: "I want the power to save somebody from death. I want to be able to stop them from going to the river Styx, and I need to go to a god for that, but the gods won't do it, so I'm going to go down to Hades and get the dark lord to allow me to have

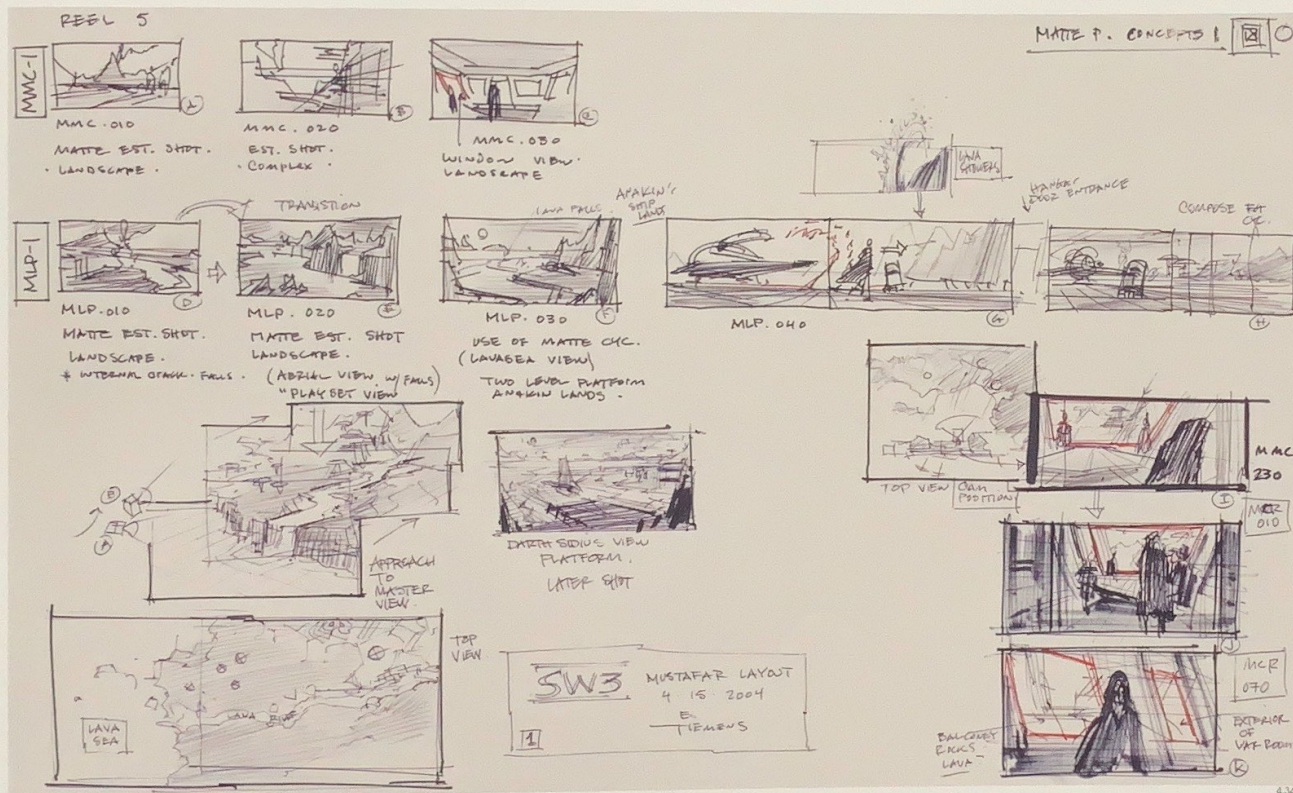


4.346



"We had eight months on the Mustafar miniatures. I believe it was the longest single miniature shoot in ILM's history. There was every sort of setup, and they were all immensely complicated."

Roger Guyett



George Lucas He hears that Padmé died. He got put on the operating table before he got a chance to save her, and she died. So it's more railing at the gods or the fates that "Given another month, I could've saved her." He thinks he was powerful enough on the landing platform before Obi-Wan intervened, so he looks at it as bad luck or fate that he couldn't get the thing accomplished in time to save his wife.

And now it's over. She's dead.

Vader was going to be extremely powerful, but he ended up losing his arms and legs and became partly a robot. So a lot of his ability to use the Force, a lot of his powers, are curbed at this point because, as a living form, there's not that much of him left. So his ability to be twice as good as the Emperor disappeared, and now he's maybe 20 percent less than the Emperor. That isn't what the

Emperor had in mind. He wanted this super guy, but that got derailed by Obi-Wan. With Luke, he can get a more primo version if he can turn Luke to the dark side. Luke is faced with the same issues and practically the same scenes that Anakin is faced with. Anakin says yes, and Luke says no.

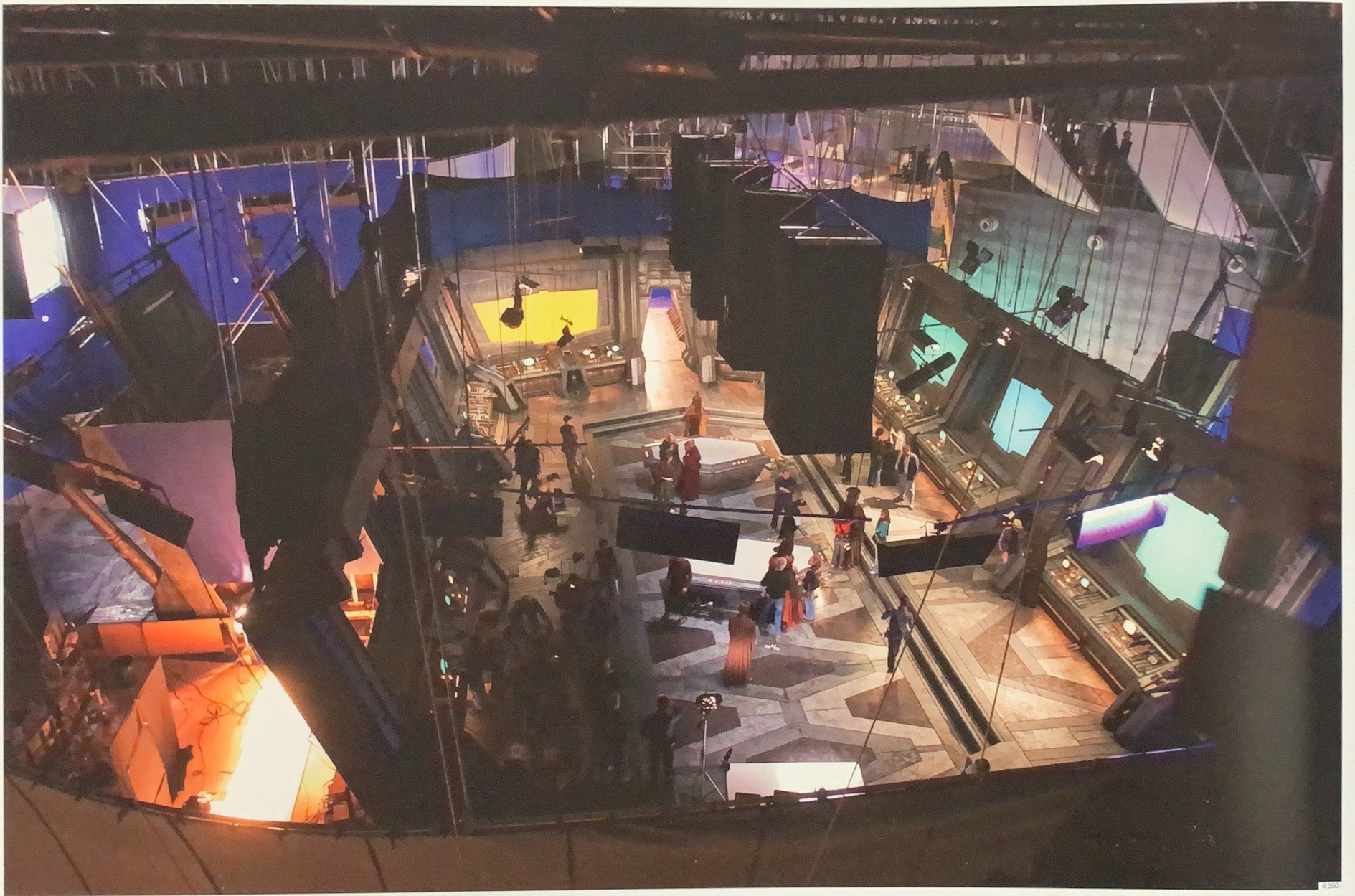
Paul Duncan So why is Vader now subservient to Darth Sidious afterwards, if he cannot save Padmé?

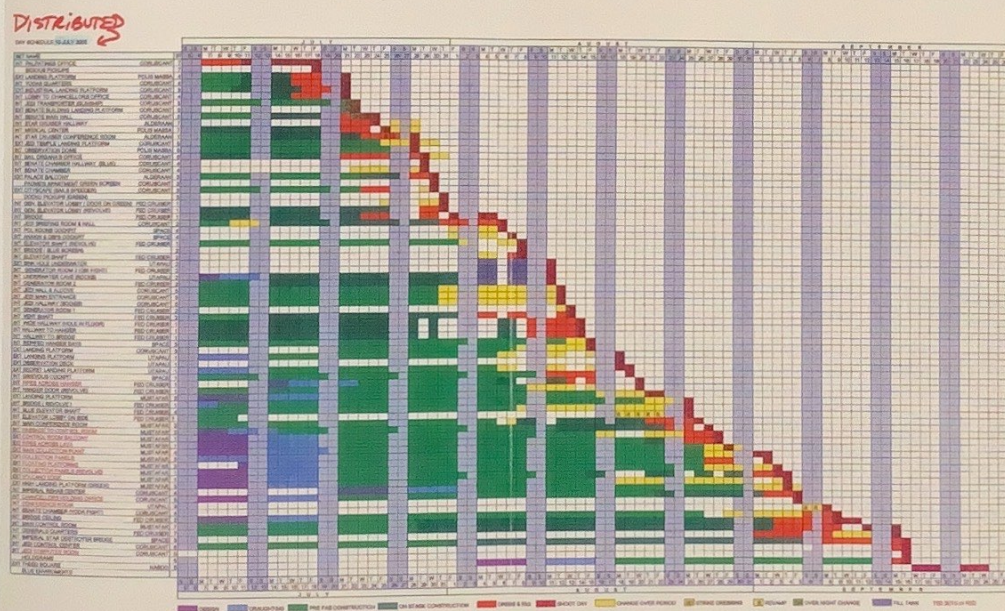
4.347 Erik Tiemens's breakdown showing the layout of the Mustafar environment and the sequence in Peel 5 when Vader arrives, lands, and enters the conference room (April 15, 2004). The "Playset View" refers to the use of the miniature model of the lava river.

4.348-349 The Mustafar Lava Set (Upper River) model was 15 feet wide, 33 feet long, seven feet high, and built at a cost of almost \$172,000. Modelshop Bid Form (June 4, 2004): "Bid for construction of high detail lava flow set. Lava will be methocel flow, bottom lit for color, with particle dressing on surface to achieve molten lava look. Lava flow will also be plumbed with air lines to achieve bubbling lava. Set will be built with the ability to change the angle, and control the flow rate. This bid does not include methocel, nor does it include delivery and recovery system."

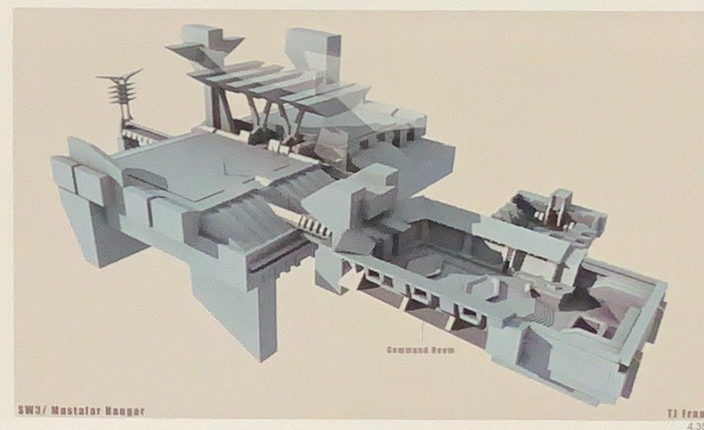


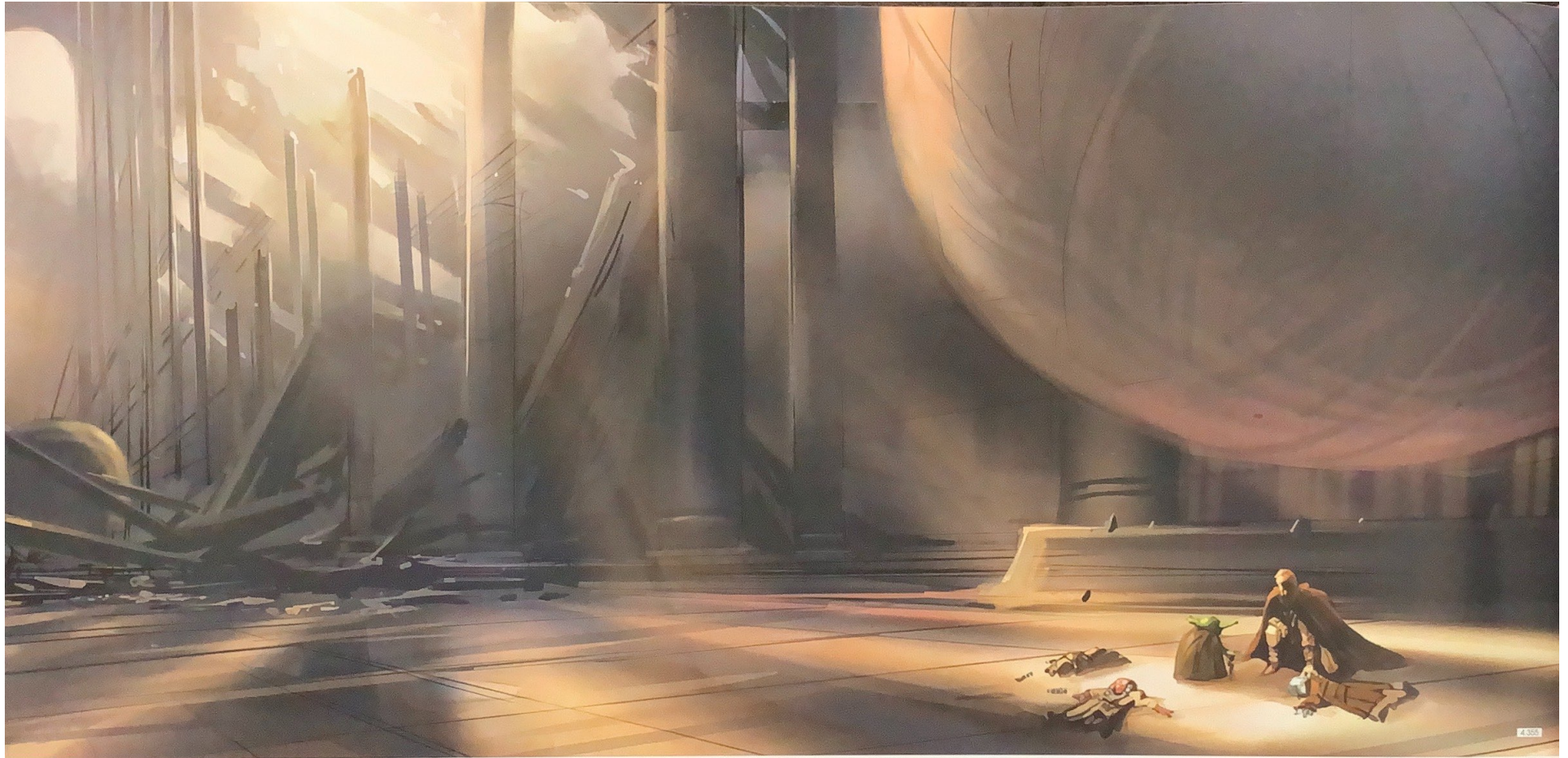




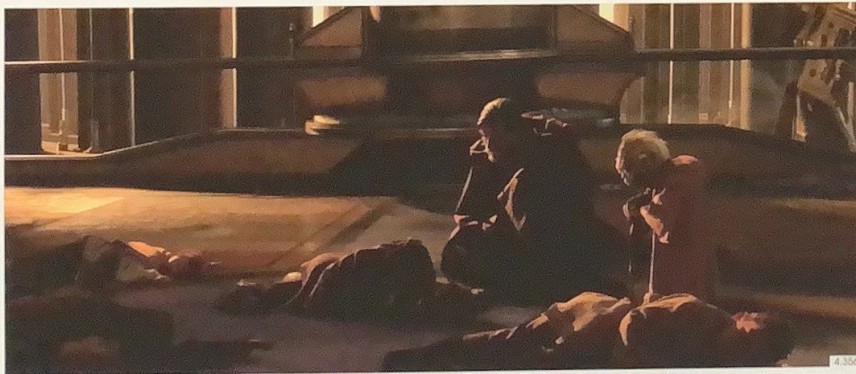
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- 4.350 *The Mustafar war room interior set with the actors playing the Separatists costumed and ready to shoot.*
- 4.351 *Matchmaker Plale Information Sheet, dated September 8, 2003, showing a plan view of Vader's entrance to the Mustafar war room (at the bottom) and his movement through the room as he kills all the occupants, ending with him in front of the boardroom. The camera also moves during the scene.*
- 4.352 *Darth Vader kills the Separatists, as instructed by his new master, to end the Clone War. Here we can see his eyes have turned yellow, showing that he is drawing upon the dark side of the Force.*
- 4.353 *The Day Schedule, distributed on July 10, 2003, shows the plan for designing, constructing, and shooting on each set. Each row represents a set, and for each set each day is color coded for Design (purple), On Stage Construction (dark green), Dress and Rig (orange), Shoot Day (brown) et cetera.*
- 4.354 *T.J. Frame's 3-D model of the Mustafar complex allows cast and crew to see the relationship between the landing platform and the war room where the Separatists are slaughtered.*





4.355



4.356

George Lucas What else is he going to do? It's hard for somebody like that to get a job, you know.

Paul Duncan I've got a vision now of Darth Vader picking up his local newspaper, looking through the job ads.

George Lucas "Wanted: Thug."

Paul Duncan "Must be over six foot three."

George Lucas Right! But he's all vengeance, hate, frustration. It's all the dark side anger. He's steeped in that now. He's going off on his revenge life to take it out on everybody. He's got a job.

Sidious says, "You're going to be my special right-hand guy." Nobody else in the Empire thinks that much of him. He's not this see-all, know-all, powerful, evil guy—he's mostly a beat up tin can. But he's powerful in a way that only the Emperor knows, which is with the Force. Nobody else believes in the Force. I mean, the Jedi had the Force and it didn't help them much—they all got killed. So, he's a regular guy, in a bad situation, doing bad things.

Lamentations

John Williams / Composer I think the greatest opportunity we have in film music is to create an emotional element in a scene that may be already there, but perhaps we can enhance it. And if it isn't there, we might suggest it. If there's a scene between two very animated and opposed people who are actually lovers, the music may be telling there's something else, a kind of undertext about what their mental state may be. It can also support action. If a horse race accelerates toward the end of the event, the music may want to be in sync with that, push it along, and accelerate with it. If the music gets too fast, it may make the action seem a little bit slow. And vice versa. Another important part of music for films is the opportunity for a composer to create a melodic identification for a particular character or a place, so that when you see that person, or that person is mentioned, or suggested even by someone's thought, that theme can be played and it's an aural identification for the listener. So in terms of atmosphere,

"Twisted by the dark side, young Skywalker has become. The boy you trained, gone he is... consumed by Darth Vader."

Yoda



4.355 Visual script art by Ryan Church and others for scene 133 showing Yoda and Obi-Wan discovering the slaughter of the younglings at the Jedi Temple. In the background much of the structure of the Jedi Temple has been destroyed.

4.356 Final frame showing Obi-Wan and Yoda's distress at their horrific discovery.

4.357 Obi-Wan learns the awful truth that his former Padawan and friend has pledged allegiance to Palpatine and has become Darth Vader.

4.358 Erik Tiemens's concept art showing Obi-Wan switching off the false signal requesting that Jedi return to the temple. The visual representation of the room was inspired by the image of stacked DVDs.

Identification of melody, action, choreographic timing elements in the music. It's part of the corpus, the body of what a film is.

On October 13, 2004, John Williams visited the Ranch for a music spotting session.

John Williams I have to confess it's always a little bit daunting when I first see these things. My first impression is usually, "My God, so much? I'm not going to be able to write all that." I may ask

George something like, "How many weeks did you say we've got to do this in?" and he'll tell me, and we laugh. I was very impressed with this film, particularly the last third of it. I had some very positive and very strong reactions to seeing the film, along with my usual first shock.

I typically work backwards. I have to think about where the music is going to be at the end of the film and decompose it. So if it's something you're going to hear in the late part of the film, you'll have suggestions of that early on in the film. So I need to

study the film, and get to work on sequences that have to do with the denouement of the story.

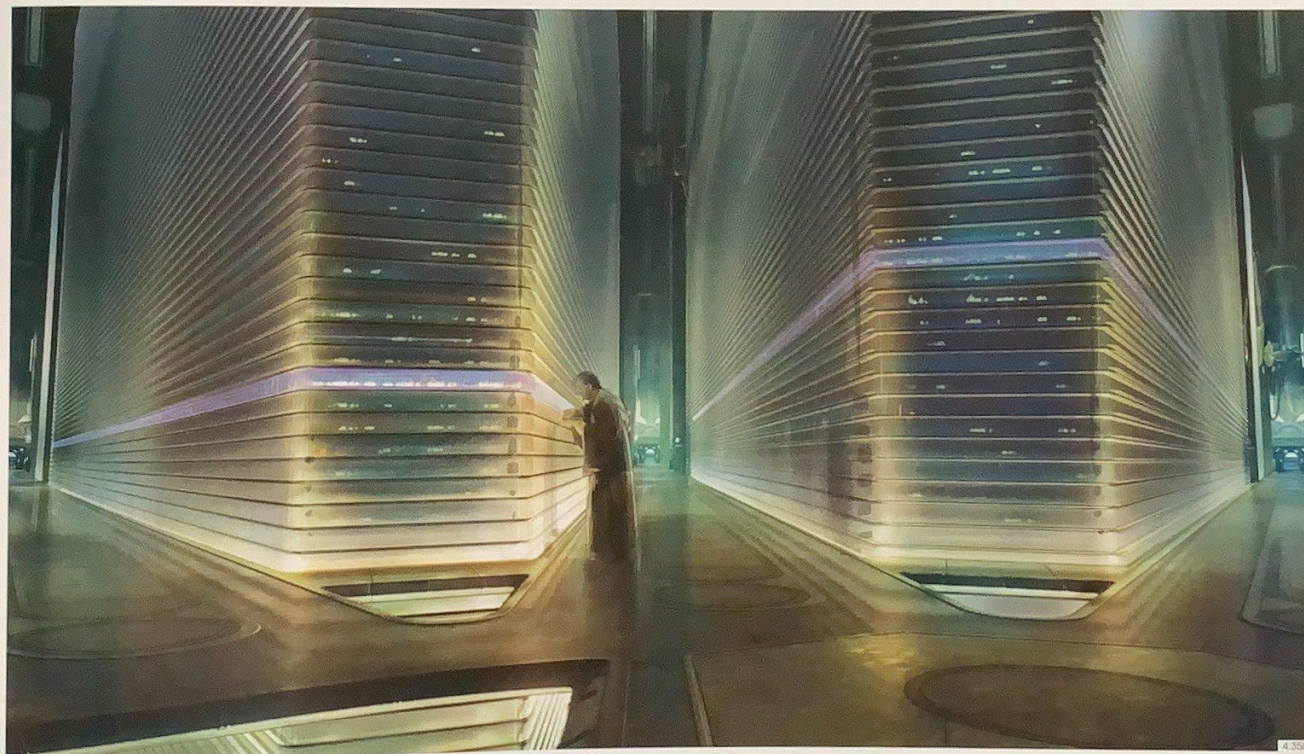
I usually look at the film and say, "Where do I know I can start? What am I reasonably sure about? What can I handle at this particular moment without knowing more about the music?" It's probably like a sculptor who will look at a stone and think, "Where do you want to risk injuring the stone?" So I'll usually start with something straightforward to give me a sense of security. I write a few measures, or even more than a few measures, and pretty soon the information begins to suggest itself as one works it out. You keep chipping away at the stone, and weeks later it's got the beginnings of a face on it.

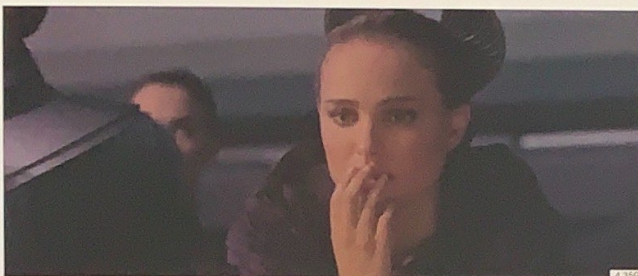
Most of this work is intuitive. People say, "How do you know when you're on the right track?" and, I guess, my answer is maybe we never know that. What's important in the work that I do is one finds a rhythm. In any human endeavor, it's not so much the work we do but the quality of the sustained work that we perform that will get us some distance to where we want to go. We always fall. I think, a little bit short of what we might want to achieve.

There are three or four pieces of new material. A couple of them have to do with what I call lamentations—they accompany Anakin's turn from the light to the dark. There's also a fun piece, a lot of percussion for Grievous. But in this film, more than any of the other five, there are references to earlier scenes, which seem to me, and to George, to be part of the way we want to tell the story musically. There's a reference to the "Force Theme"—the positive side of the Force—which is referred to more and more in this film. There are even references to Princess Leia's forthcoming arrival. There are quotations of "The Imperial March (Darth Vader's Theme)." And as Anakin is going through his process of change and becoming Darth Vader, we have more and more need to refer to earlier melodic references. And so it's a combination of new material and old material. It's quite a musical tapestry.

We're going to a new choral piece, "Battle of the Heroes," which does contain some references to "Duel of the Fates," but most of it is entirely new. And again it's Sanskrit, and it's a translation of a very simple line which is "Grievous are the crimes of the Empire." We don't need to know what the Sanskrit words mean, but from the sound we understand what the emotional intention of it is.

The *Star Wars* saga is tragic in many ways, but there's also a new birth, plural in this case, in this film. It has the contour of the great human stories, that people do terrible things and accomplish glowing, illustrious, and wondrous things also. So I think while it has its tragic aspect and that's part of our musical role, it's also very positive.





4.359

4.359 Final frame showing Padmé at the Senate to hear Palpatine's speech. She is hopeful that democracy can be restored but is horrified at the outcome. Note that her headpiece is similar to the starbird logo of the Rebel Alliance.

4.360 Jimmy Smits (center) and Natalie Portman (right) inside the Senate Pod set.

4.361 Palpatine tells the assembled senators about a plot by the Jedi to overthrow the Senate. He announces to the Senate that to ensure the security and continuing prosperity of the Republic he is creating the First Galactic Empire.

4.362 Iain McCaig's designs for senators (March 25, 2003).

4.363 McCaig's design for Senator Fang Zar, played by Warren Owens (March 25, 2003).

4.364 McCaig's design for Senator Chi Eekway, played by Katie Lucas (April 24, 2003). Eekway and Zar were senators aligned with the nascent Rebel Alliance.

Totally Cool

On November 2, Lucas and his daughter Katie made a cameo in a scene set in the opera hallway. Lucas plays Baron Papanoida and Katie took the role of Senator Chi Eekway. Both wore blue face makeup.

George Lucas My daughters insisted that I be in it, and so I did it.

ILM continued work on Darth Vader's construction in the Imperial rehabilitation center with real and digital shots.

Roger Guyett The operating table was a practical and they built part of the floor, but then we tricked it out with a lot more stuff going on around Hayden. Basically, the whole rehabilitation center environment is a 3-D digital matte painting. We had this bright light shining down on the operating theater. It's got that

**"So this is how liberty dies,
with thunderous applause."**

Senator Amidala



4.361



4.360

ER look, but with a slightly more ominous feel to it than your local hospital has—or I hope it does anyway.

We shot different pieces for it, including Hayden on the operating table wearing burn makeup and a blue screen suit, so we could track various CG elements to his movements as the droids add on the remainder of the two legs and the arm. We've done combinations of elements of the Vader suit, elements of somebody inside the suit, but you don't see Anakin getting dressed. You see him at the beginning of the process where he's looking in a real bad way, then, after he's been reconstructed, the table is rotated into a vertical position, hence the shot that was seen in the film's trailer—which we later changed. Of course, the moment most people are waiting for is to see the mask going on. First the main face mask goes on, then the helmet comes down over the top of that. We used some live-action pieces of the helmet, but in the wide shots we're using a CG helmet because it was easier to deal with.

George had done an animatic of the mask coming down, but when we were photographing it, I said, "We should definitely shoot this over length," because I thought the interesting thing would be for the audience to be Vader for a couple of seconds. When George saw the test, he was like, "Yeah! Now I've got to figure a way to make it all cut together." For the interior of the helmet, we thought it would be easier to use a practical helmet since we had it.

Don Bies / Droid Unit Supervisor Ryan Church's direction was that the mask's supposed to look painful: It goes on easy but it doesn't come off easy. I used the readers from computer hard drives in there—which made it look like if you slipped this thing on your face, it would cut into your cheeks.

Roger Guyett We then added the "Vader vision." We stuck with what was built by the model guys, and added all the electronics—moving screens and that sort of stuff. We went with a sort of night vision but in red and some graphic overlays over that. One of the guys working on it said to me, "I've waited 25 years for this moment!" Well, it is a huge moment and it's totally cool.

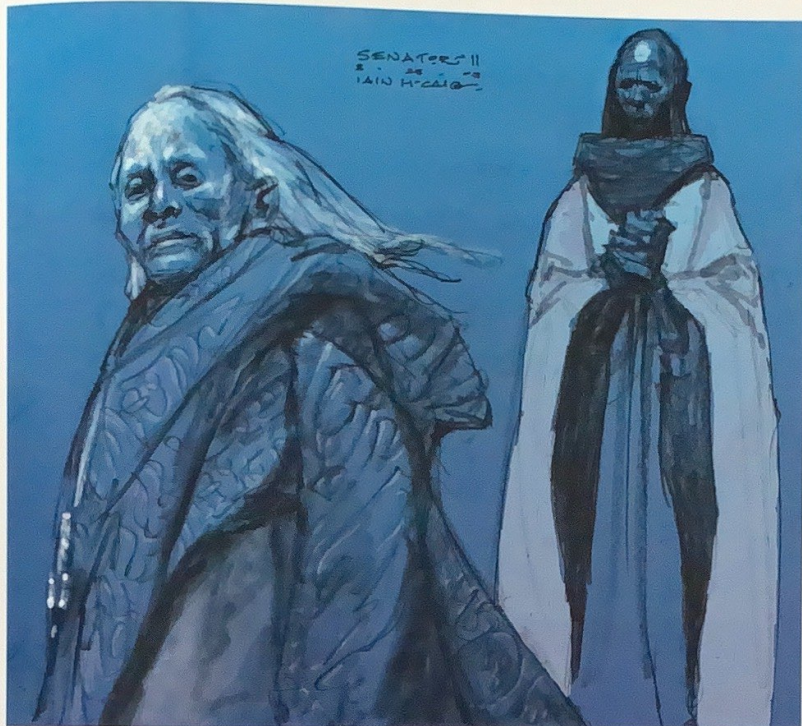
Twenty-Eight Years

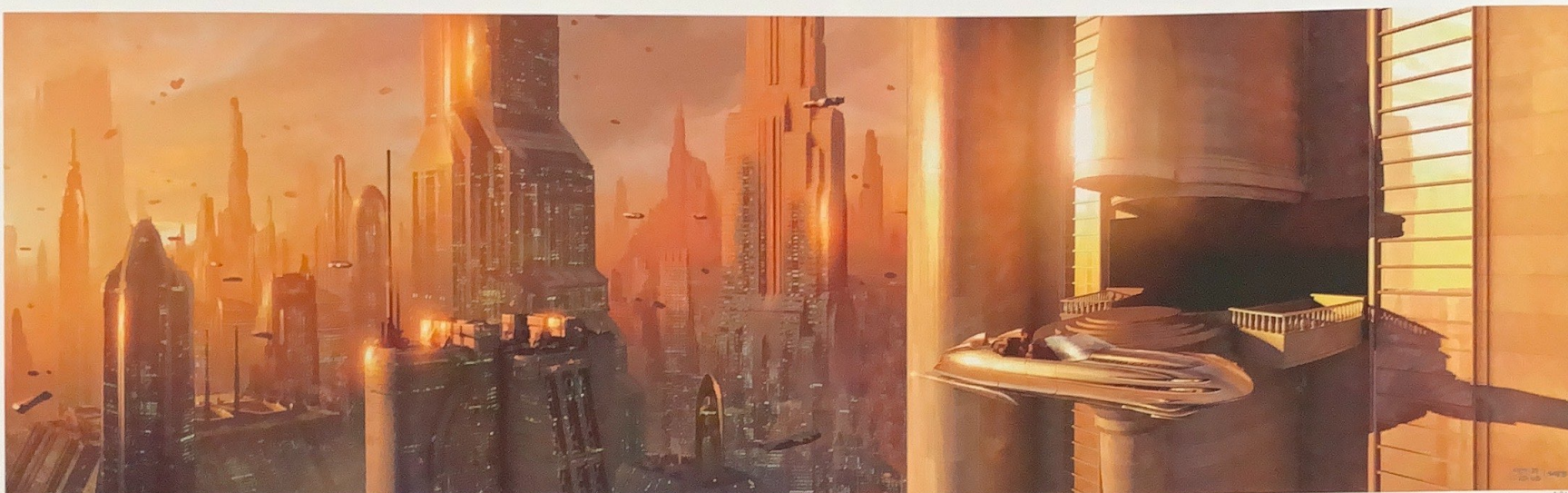
On January 31, 2005, a final day of filming with Hayden Christensen and Natalie Portman was undertaken at Elstree Studios to complete scenes set in Padmé's spaceship, Palpatine's office, the Federation cruiser General's quarters, and the Mustafar lava river, where Anakin runs up the collection arm as it is about to topple over into the falls. The nine setups were finished by midday.

George Lucas Cut. Last shot. Finished. Rick, it's all over. Twenty-eight years.

On February 2, 2005, John Williams and the London Symphony Orchestra, who had worked together on all six movies, began recording the score at Abbey Road Studios in London. The recording was planned for nine days.

John Williams George Lucas's *Star Wars* films probably demand more music than any other film, in terms of quantity, because the orchestra plays almost exclusively along with the action through





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the two hours plus of the film. It's a tremendous amount of music, and so one needs to be unencumbered by the insecurity that would not allow us to write so many bars of music a day.

I write the short score, then the eight or so lines that I have written—one each for flutes, oboes, trumpets, trombones, first, second, third violin et cetera—need to be expanded onto a 32-line score where every instrument is assigned. A copyist extracts the flute part, and the flutist only sees that. And the same is true of the other parts. It's from those parts that the players play. The conductor's job is to bring it all together, coordinate that, and balance it. The balancing issues are addressed maybe 80 percent in the writing of the music, and maybe as much as 20 percent would be addressed on the stage with the orchestra.

When the orchestra comes, they will not have seen the music. The sight-reading in relation to the *Star Wars* orchestra

recording sessions is phenomenal. It makes my job in rehearsing, working it up, and getting it ready to record a lot easier than it used to be. And though it begins with sight-reading, it goes so far beyond that. There's a whole area of comprehension that comes with it.

The conductor is responsible for the synchronization of the musical activity with the film; it's a big part of the job. And in many ways it's the most impossible and the most enjoyable part of the job because it's the moment where the music gets off paper, where it's an abstraction, and becomes a live human thing.

We may perform the music of a scene four or five times to get it done perfectly. And in my mind, and also the mind of George Lucas, who has been sitting with me for years looking and listening, the second take may be much more impressive than the first or the third, or even the fifth one. Every performance is a



4.369

- 4.365 Concept art showing a speeder arriving at Padmé's private apartment in Coruscant (November 25, 2003).
- 4.366 Rehearsals as Lucas (right) directs Portman (center) and McGregor (left) for the highly charged scene in the senator's apartment where Obi-Wan has learned the truth about Darth Vader and reveals it to Padmé. She refuses to believe it. In the background script supervisor Jayne-Ann Tenggren takes notes to record any change to the dialogue.
- 4.367 Obi-Wan implores, "Padmé, I must find him."
- 4.368 Final frame of Padmé embarking upon her journey to meet Darth Vader.
- 4.369 Iain McCaig's practical costume design for the heavily pregnant Padmé (December 21, 2003).
- 4.370 Padmé's ship about to leave for Mustafar. She is unaware that Obi-Wan has secretly stowed away.

different experience because of the conducting, the playing, the temperature, the atmosphere, the time of day, all of it. How people feel.

On days when the orchestra is not recording, ADR dubbing sessions were held with the actors, supervised by Matthew Wood. Frank Oz recorded Yoda's dialogue on February 5.

Rob Coleman Frank slid right into Yoda, no problem. They would record it 10 times with different intonations, and George would say, "I like that one and I like that one." Matt would take a minute and then you could watch the movie with the lines cut right in. So George was able to make sure the reading worked for the length of the shot, and for any body or hand actions. I was afraid Frank wouldn't be able to sustain his voice hour after hour after hour. He must have drunk two gallons of water, but he kept going for five hours.

Anthony Daniels, who has the last line of Episode III and the first line of Episode IV, also recorded his dialogue the same day.

Ben Burtt For Grievous's voice I tried experiments like Vader's breathing, with different electronic tones and different sounds associated with him, but George said he didn't want to confuse Grievous with Vader and the idea was dropped. In the end the voice was executed by supervising sound editor Matthew Wood. He tried out for the part—anonymously—and won it.

A Different Story

George Lucas Most people would never hire a sound editor at the beginning of the process. Every time you make a change in a movie, you have to change all the tracks, and it costs a lot of money to be constantly changing things.



4.368

I've always had a very strong belief that sound is 50 percent of the psychological experience of watching a film. I have always hired the sound editor the same day I hired the picture editor. I've always had the sound editor working alongside the picture editor so that when we're looking at cuts, we're looking at things with proper sound, so we don't look at it in isolation. We can incorporate sound editing into the picture editing work and look at the cuts with those ideas intact so we can say, "that works." So when you get down to the end and you have a fine cut of the picture, you usually have your soundtrack cut. You still have to do some of the ADR and Foley and fix some things, but basically it's finished.

Ben Burtt worked as editor, sound designer, and supervising sound editor on the movie, working with Avid Film Composer Pro Tools LE, and a 7,000-effect Star Wars sound effects library on a FireWire drive.



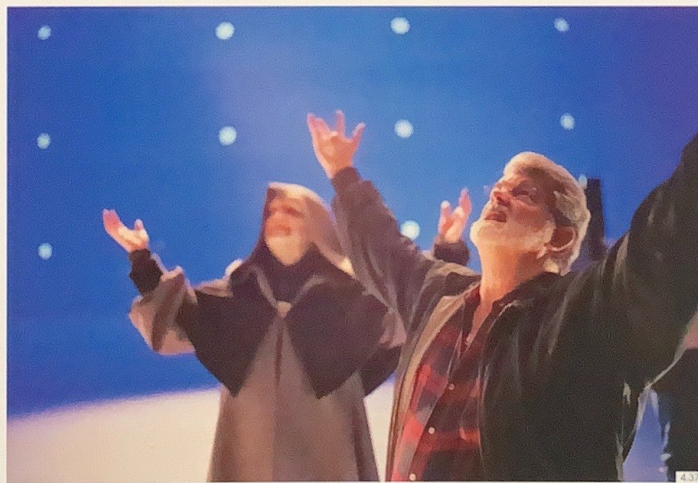
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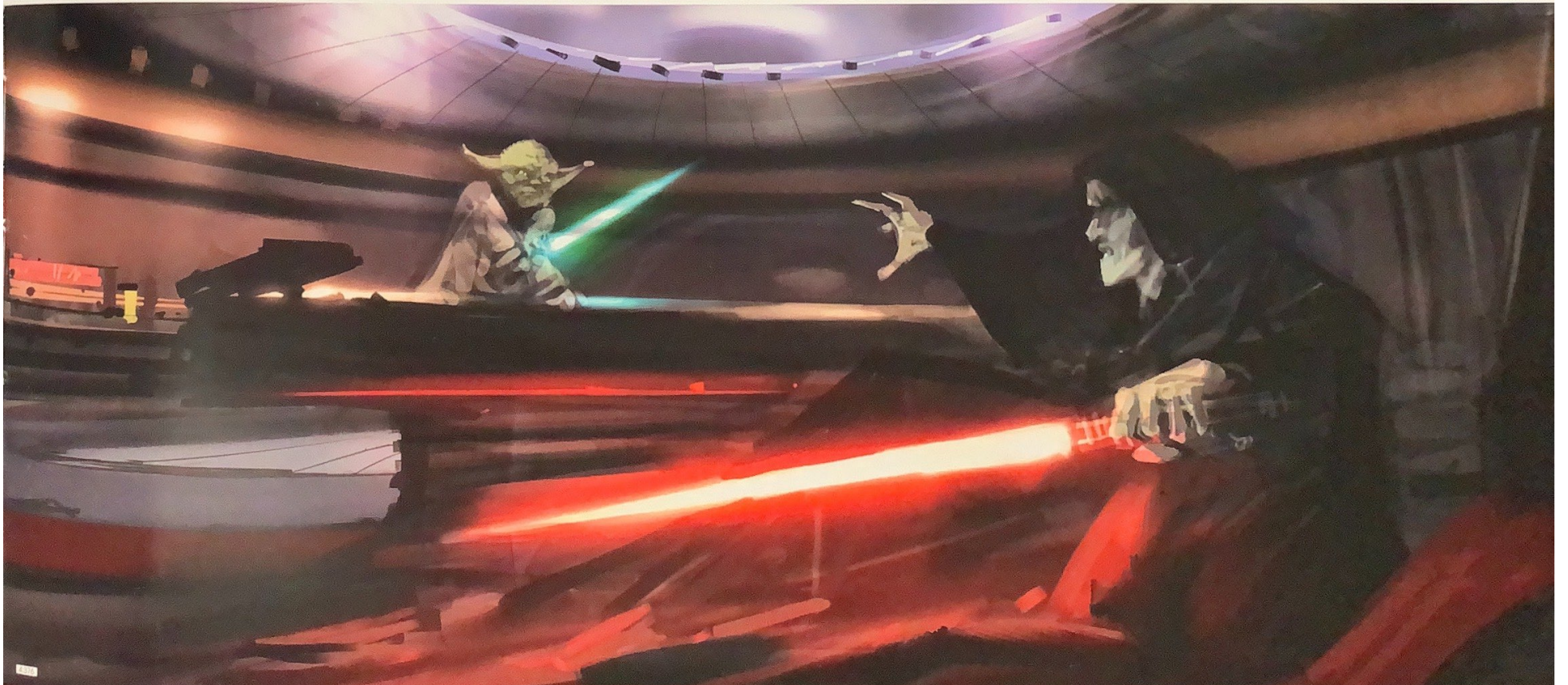
4.371 The Emperor: "Now you will experience the full power of the dark side." Visual script art by Ryan Church and others for scene 144a showing Yoda (right) deflecting Force lightning from the Emperor as Mas Amedda and the guards look on.

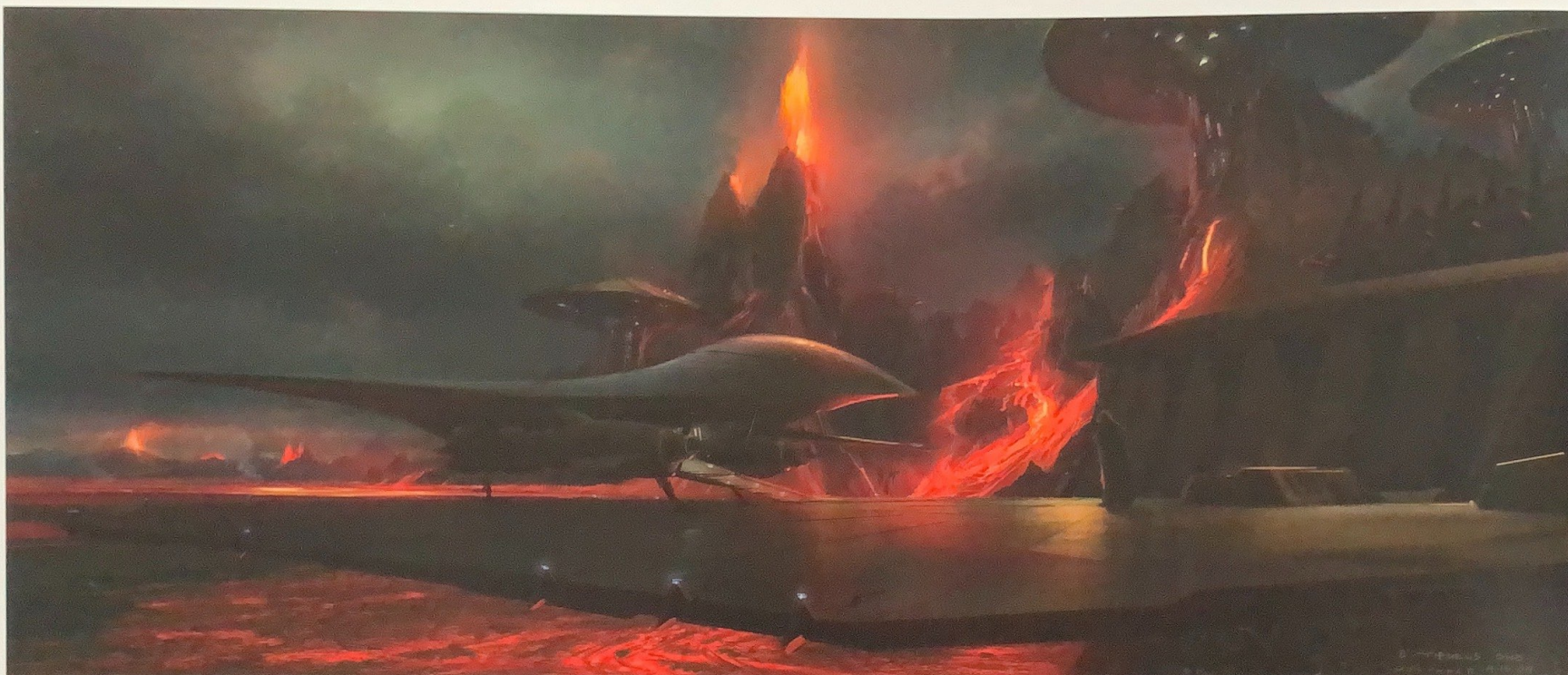
4.372 A model of Yoda was axed on set so that the actors' eye lines were matched when shooting the scene.

4.373 Lucas (right) directing Ian McDiarmid. The Emperor believes that he has dispatched Yoda using his Force lightning and is delighted that victory is his. Lucas is clearly enjoying the moment as well.

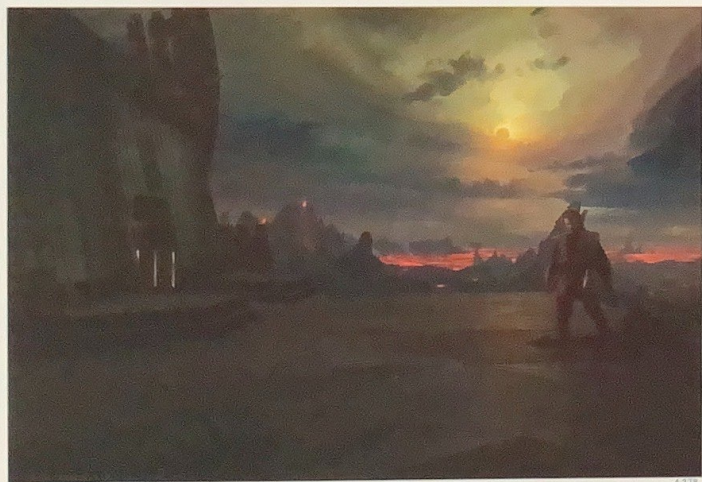
4.374-375 Yoda cannot be defeated so easily. The Jedi Master ignites his lightsaber and the Emperor instantly draws his own weapon. The battle between Jedi and Sith begins.

4.376 Visual script art by Church and others for scene 144b showing the battle between Yoda and the Emperor in the Chancellor's holding office beneath the Senate.





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4.379

“Anakin, all I want is your love.”

Padmé Amidala

***“Love won’t save you, Padmé.
Only my new powers can do that.”***

Darth Vader



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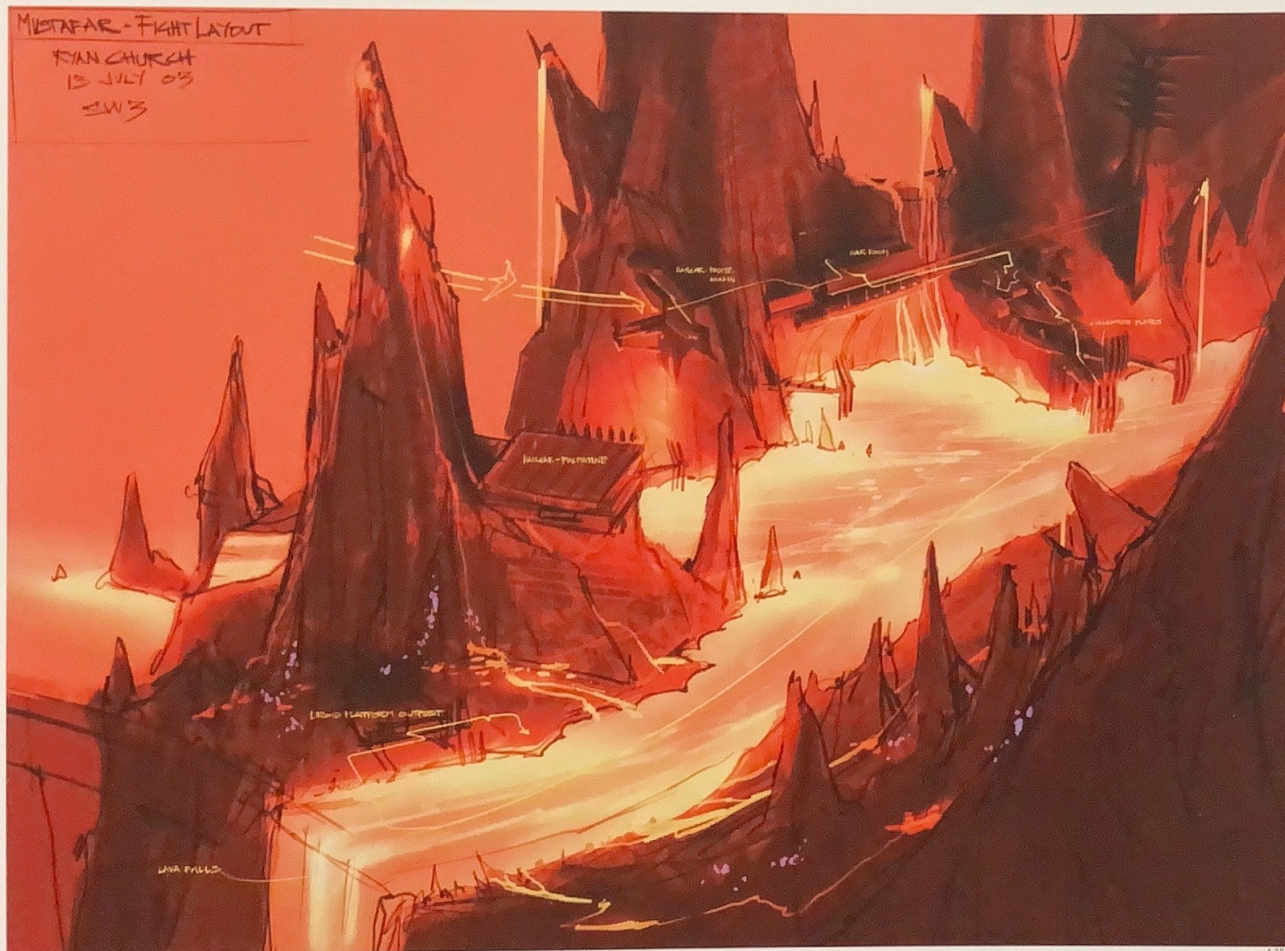
- 4.377 Erik Tiemens's concept art for shot MLP 140 depicting Padmé's arrival on Mustafar (April 13, 2004).
- 4.378 Concept art showing Obi-Wan Kenobi on the landing platform with the sun behind him.
- 4.379 Visual script art for scene 145 showing Padmé and Darth Vader embracing as she tries to comprehend what has happened to him.
- 4.380 Tiemens's concept art shows Darth Vader drawing his lightsaber as a determined Padmé holds a knife (December 19, 2002).
- 4.381 George Lucas watches the monitors as Portman and Christensen play out their dramatic scene. Hayden Christensen: "I noticed a significant change with George on this movie. He was genuinely passionate about the story he was telling. He would get so excited. He was up from behind the monitors on every take, talking to the actors, getting into it."
- 4.382 Final frame showing Darth Vader using the Force to choke Padmé when he discovers that she cannot agree with his actions and new-found ideology.
- 4.383 Portman and Christensen playing the final tragic scene between Padmé and Darth Vader. Darth Vader: "Together you and I can rule the galaxy, make things the way we want them to be." Padmé: "I don't know you anymore. Anakin, you're breaking my heart. You're going down a path I can't follow."

"If you are not with me, then you are my enemy."

Darth Vader

"Only a Sith deals in absolutes."

Obi-Wan Kenobi

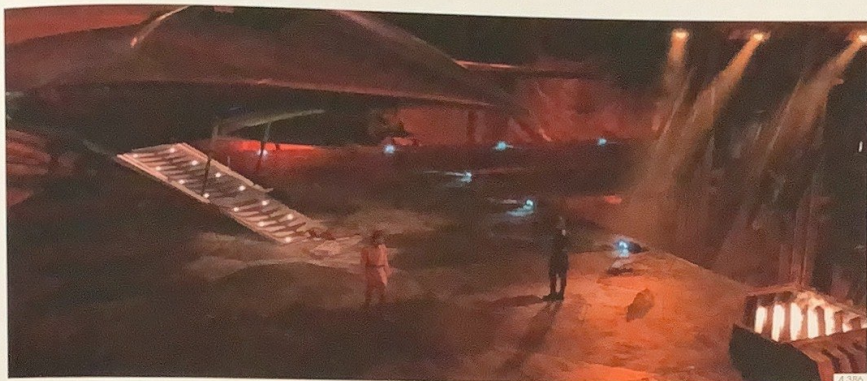
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4.384 Ryan Church's layout of the Mustafar landscape and environment for the climactic duel between Obi-Wan and Darth Vader (July 13, 2003). Arrows on the drawing indicate the direction of the battle.

4.385 *Matchmover Plate Information Sheet, dated August 7, 2003, for the beginning of the final duel. As with Palpatine and Anakin on Coruscant, and in Spaghetti Western showdowns, Darth Vader and Obi-Wan circle for position before the battle commences.*

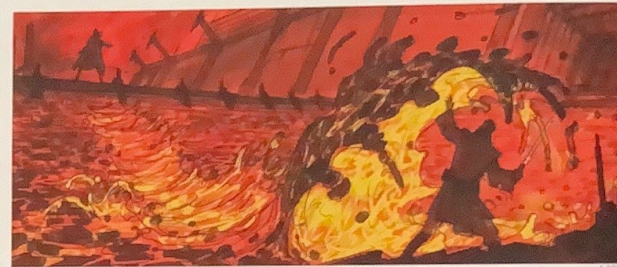
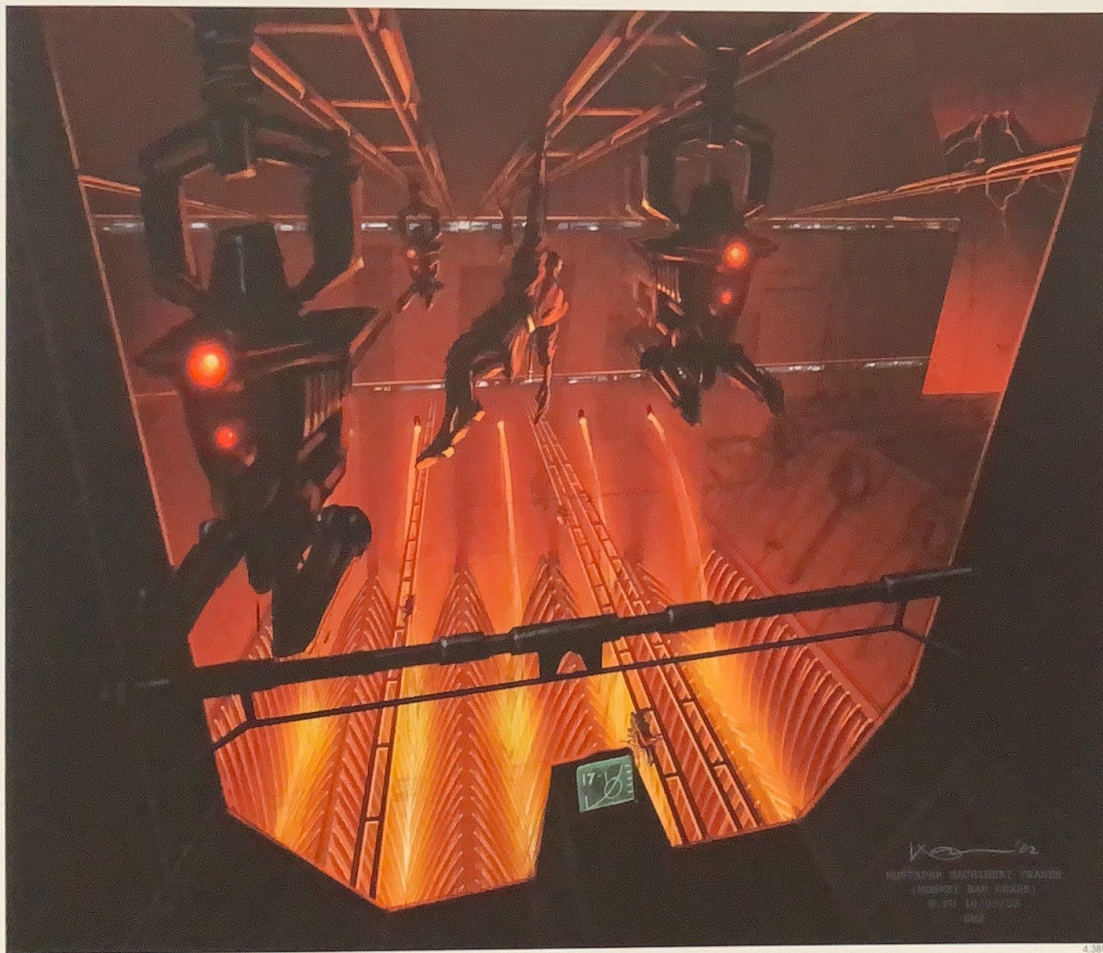
4.386 *Obi-Wan reveals himself. He and Vader face off, with Padmé unconscious on the landing platform.*

4.387-398 **Darth Vader is furious, believing that Obi-Wan has turned Padmé against him. His former mentor cannot reason with him and a battle is inevitable. Vader: "You will not take her from me." Obi-Wan: "Your anger, and your lust for power, have already done that. You have allowed this Dark Lord to twist your mind until you have become the very thing you swore to destroy."**



"I thought it'd be cool to have them fall into a pit with really smooth sides and a sharp fan at the bottom, but George said it'd be too easy for them to jump out."

Warren Fu / Concept Artist



- 4.389 There were many ideas proposed for the climactic duel. Warren Fu suggested a monkey-bar style chase using the cranes above the lava pits (October 30, 2002).
- 4.390 Derek Thompson's idea was for Vader to use the Force to direct a wave of lava at Obi-Wan, who protects himself with a Force shield (November 5, 2002).
- 4.391 In this concept, Fu places the combatants in a boiler room (October 30, 2002).
- 4.392 Fu's concept for the Mustafar fight in a pit (October 31, 2002). Note that Fu has shown Darth Vader's lightsaber as red—usually an indicator for a Sith Lord—but in the film Vader retains his blue-colored saber.



Xo'02

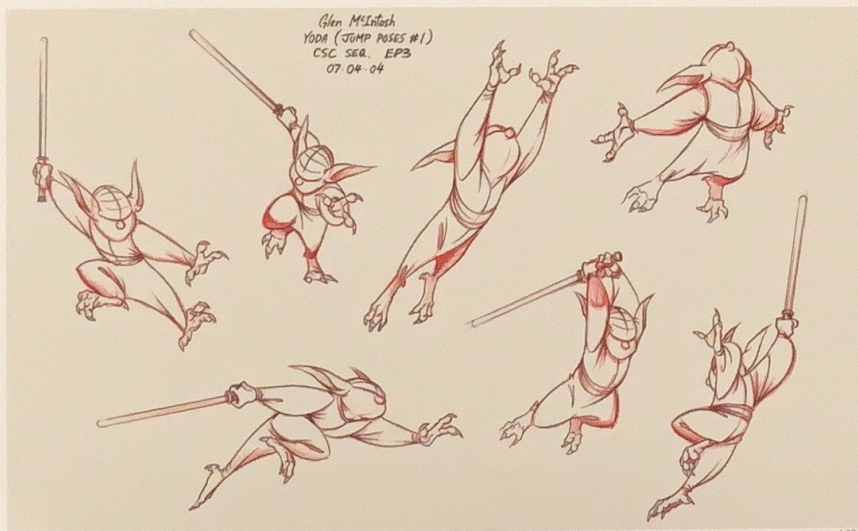
MUSTAFAR FIGHT PIT

W.FU 10/31/02

SW3



4.393



4.394



4.395

4.393 Visual script art by Derek Thompson for scene 147 showing the Emperor's battle with Yoda inside the Senate Chamber.

4.394-395 Glen McIntosh's dynamic interpretation of Yoda's jump poses (July 4, 2004).

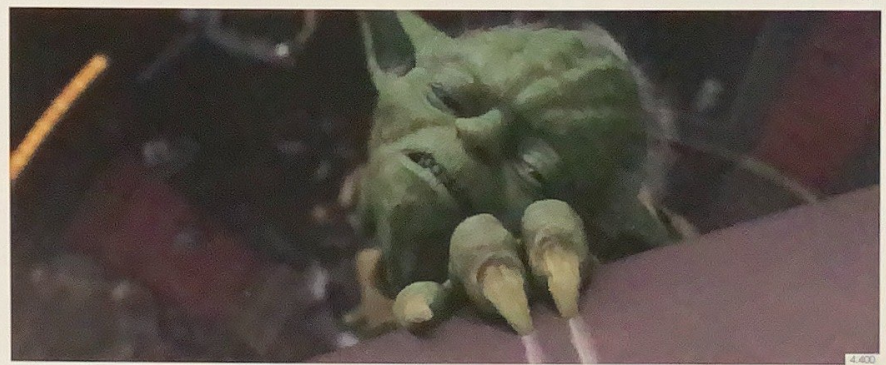
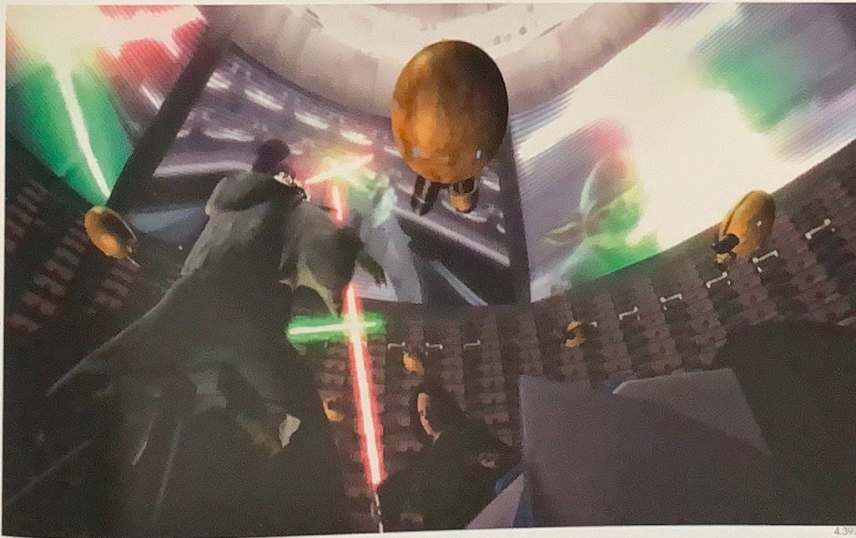
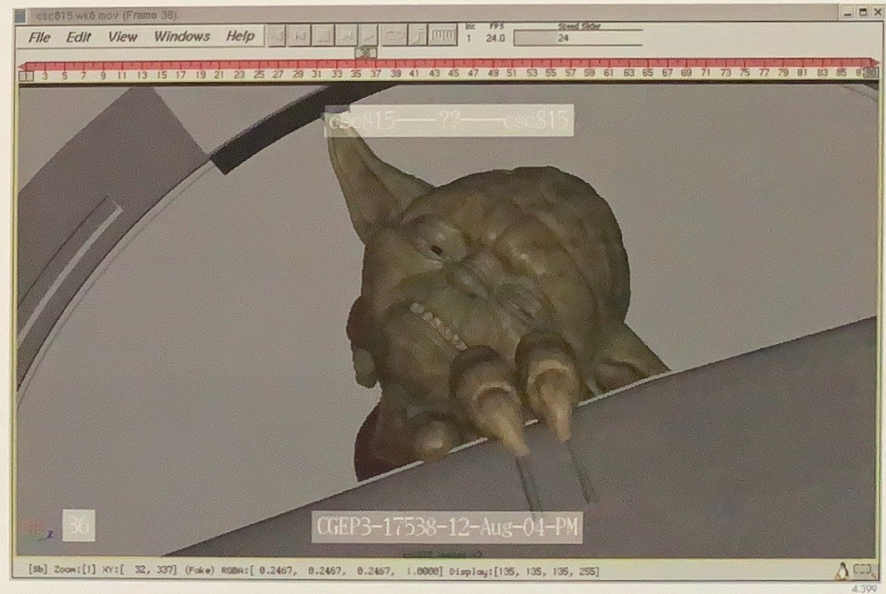
4.396 Final frame showing Yoda and the Emperor dueling atop the Senate's central podium.

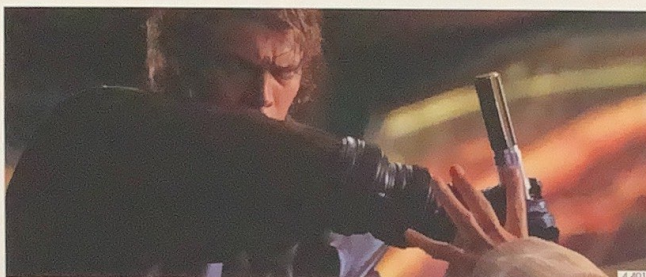
4.397 This early animatic concept, directed by Steven Spielberg, shows the battle between Yoda and the Emperor being relayed live by floating cameras to the screens in the Senate and throughout the galaxy.

4.398-400 Animation director Rob Coleman recorded himself hanging from a balcony to help animate Yoda clinging to the Senate podium, as can be seen in the August 12, 2004, 3-D graphic. In the final frame Yoda can be seen losing his grip as his nails scrape along the edge of the podium. After Yoda's defeat he escapes with the help of Bail Organa.

***"The revenge of the Sith is Palpatine's revenge.
Darth Vader is a pawn in the whole scheme."***

George Lucas





4.401

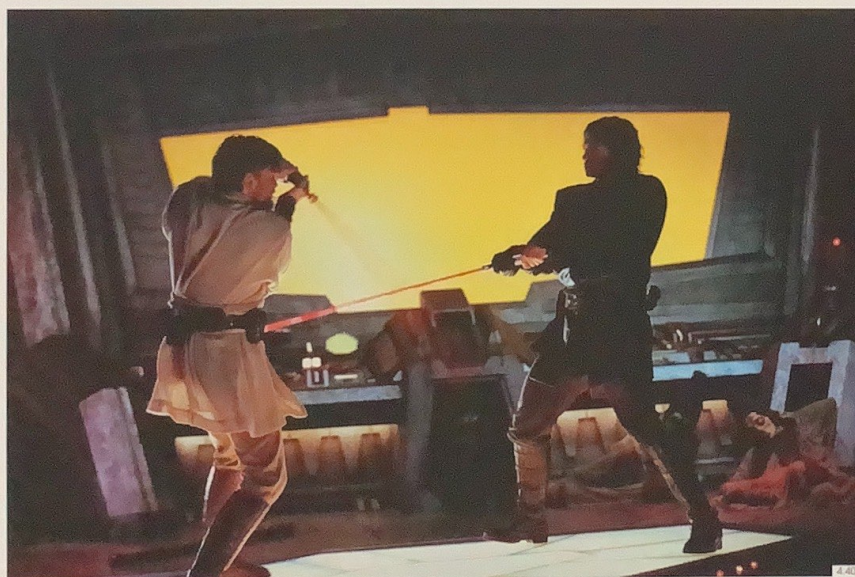
Ben Burtt George and I have always wanted to have one integrated system for all editing and mixing, including picture. What we would love to be able to do is edit the film on some platform, add the soundtrack to it, and have it behave as if it were Pro Tools, with all of the voices, processing, and 5.1 mixing capabilities right there in the hands of the picture editor. You can do a picture change at any moment and ripple that change through all the soundtracks. A lot of the inspiration to mix in Pro Tools came from the idea, "Well, look, we can't combine picture editing quite successfully with Pro Tools and the mix, but we can now blend the sound editing, premixing, and final mixing into one system." And so we decided to commit to that goal on Episode III.

The full trailer for *Revenge of the Sith* was released on March 10. It was broadcast with the teen drama TV series *The O.C.*, then released online and in cinemas the next day. *Episode III* was the first *Star Wars* film to be rated PG-13 by the Motion Picture Association of America.

George Lucas I don't mind a PG-13. This one is a little tougher, and I think children, young children especially, should be warned that this is not your average *Star Wars*. There's a lot more scary stuff in it. It's brutal in places, and they should be aware of that. People think *Star Wars* is extremely innocent, although we do cut a lot of people in half and cut a lot of arms.

Early screenings for *Episode III: Revenge of the Sith* took place on May 12, 2005, across a number of cities in the US to raise funds for children's charities. The film went on general release worldwide on May 19, 2005, and made a worldwide gross of \$848,754,768.

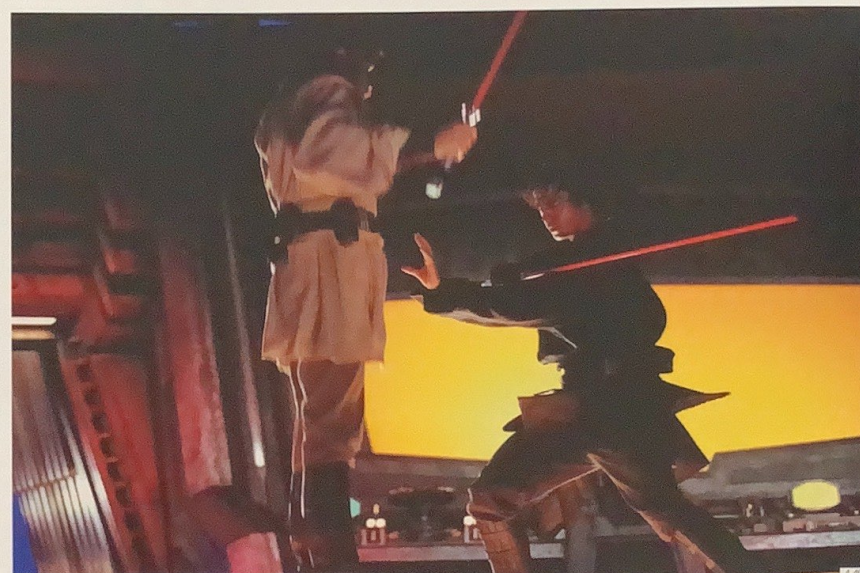
George Lucas I am happy with how it turned out, and I'm happy that I now have a 12-hour saga. It is important to me that you can see the whole story, from start to finish. I pretty much got everything I wanted. I'd say they are 96 percent of what I wanted. Even on the first films, I went back and fixed what I didn't like —



4.402

"The most fun I had on the two films was getting to do the lightsaber fight with Ewan. You feel like you're ten years old. Ewan and I are both competitive people, and we both want to show our lightsaber skills. No disrespect to Ewan, but I think I took a few more on the hand than he did. It really hurts."

Hayden Christensen



4.403

Int. War Room

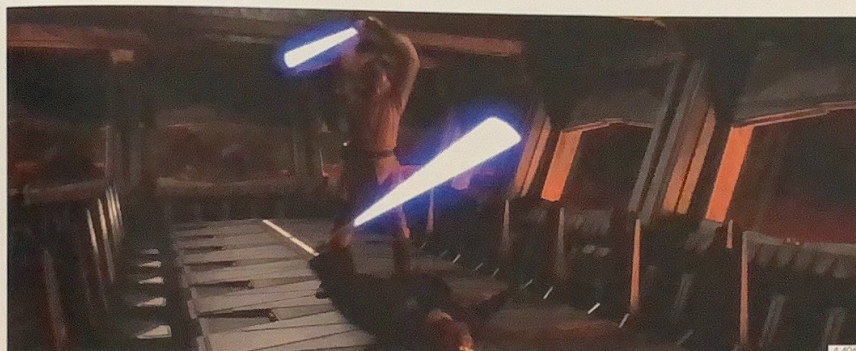
Key

- Extent of Set Build
- Anakin
- Obi-Wan



4

4.404



4.405

that was the whole point of the special editions—so now I'm happy with those films, too. I'm not at all frustrated the way I was before.

Paul Duncan You talked before about circles within circles and a bigger structure. The films often have mirrored events, so Episode I is like Episode VI, Episode II is like Episode V, and Episode III is like Episode IV. For example, the Gungans fighting the droids, is like the Ewoks fighting the stormtroopers, only the Ewoks win; Obi-Wan holding Qui-Gon as he dies echoes Luke holding Darth Vader; the love story of Anakin and Padmé mirrors Leia and Han; the Clone War on Geonosis is like the battle on Hoth; and the rescue of Palpatine in III is like the rescue of Leia in IV.

There are also recurring events: Dooku cuts off Anakin's hand and then Anakin cuts off Luke's hand; the transfer of one father figure to another—Anakin from Obi-Wan to Palpatine in Episode III, and Luke from Lars to Obi-Wan in IV. I could go on. There's a long list.

George Lucas You're right. It's like a mandala. As you write you're doodling, but there are certain themes that keep repeating themselves in different forms. When I did the first film, I planned to do three, so there were pieces in there that I expected to pay off later. That's why I put back the Jabba the Hutt scene in *A New Hope* Special Edition, because he was the bad guy for VI.

Paul Duncan Were you conscious of those specifics as you were writing it, or was it an intuitive process?

George Lucas Some of it is intuitive. But after IV I intentionally thought, "Okay, we're showing you an idea, but now I'm going to turn it inside out and show it to you again. Then I'm going to show it to you again in a different way."



4.403

And then with the prequels, it became about comparing this is what Anakin did, and this is what Luke did. Playing those ideas back and forth was fascinating to me because I was able to intertwine their actions. We have the scene where Anakin decides to save Palpatine and join him, so they could learn how to save Padmé. The equivalent scene in VI is where the Emperor's trying to get Luke to kill his dad so he can save his sister.

If you watch the films in order from I through to VI you'll see a different story from the one you remember. A big scene like the "I'm your father" speech has a completely different feeling when you already know Darth's his father and you're waiting for Luke to find out. Dramatically, I don't think it hurts anything to have some of the answers before you get the question. The films become more about the progression of the characters.

You learn that Darth Vader isn't this monster. He's a pathetic individual who made a pact with the Devil and lost. And he's trapped. He's a sad, pathetic character, not an evil big monster.

4.401 Final frame showing a close-up of a determined Darth Vader as he and Obi-Wan try to dominate the other using the power of the Force.

4.402–403 Ewan McGregor and Hayden Christensen filming the duel inside the war room on Mustafar. The set was used as part of the fight choreography.

4.404 A foam core model was built and photographed, then a series of boards were made to show the proposed fight sequence inside the Mustafar buildings. The line of green dashes represents the extent of the constructed set. The blue and purple lines represent Obi-Wan and Vader's route through it.

4.405–406 The fight progresses to the conference room. Darth Vader gets the upper hand using his artificial arm to choke his former mentor. But Obi-Wan frees himself and kicks his former Padawan onto the conference table. Lightsabers are reignited and the frenzy of the duel restarts.

4.407 During the fight inside the war room, the corpses of the slain Separatists, including Nute Gunray, can be seen littering the floor.



4.407

"It was exhausting because you have to be at a fever pitch for every take. In II, I wasn't very good at the fighting. I didn't give it my all, really. Whereas in this, I really went for it."

Ewan McGregor



4.408

I mean, he's a monster in that he's turned to the dark side, and he's serving a bad master, and he's into power, and he's lost a lot of his humanity. In that way, he's a monster. But beneath that, as Luke says in *Return of the Jedi* to Leia, "There is good in him. I've felt it." Only through the love of his children and the compassion of his children, who believe in him even though he's a monster, does he redeem himself.

The Real Hurdle

George Lucas On April 30, 2005, we had another digital conference; the only new person joining us was Bob Zemeckis. So, we'd gone from five people to six people in three years. Out of the 6,000 people making movies, there were six of us doing it digitally.

When I did *The Phantom Menace*, I was in four digital theaters. We pioneered that. Then, for *Attack of the Clones* we got into

about 120 digital theaters. But for Episode III we were back down to about 80.

Paul Duncan And there were over 36,000 screens in the US.

George Lucas But the problem was a business problem, not a technical problem. Technically, we had it all worked out. It was perfect in every way. The problem we had was who's going to pay for all this?

Paul Duncan What were the economics of film print distribution at that time?

Rick McCallum A print is made in the lab. A teamster has to go pick up that print, take it to the airport. There's another teamster, at the airport in Kansas City or wherever, and he takes it to the theater. Afterwards, by law that print has to be destroyed because it's chemical waste. A teamster has to pick it up, take it back to the airport, another teamster picks it up at the other end, and so on. So a print that might cost \$1,500 ends up costing \$3-\$3,500. If you have 20,000 prints, you've got \$60 million in prints.

George Lucas We told the studios, "If you have 15 big movies a year, you could save a billion dollars a year distributing it digitally." But they said, "We don't want to do this."

Rick McCallum It was insane. They were afraid of the unions, the theater owners... You have to remember that if a studio had a movie that didn't make money, and they've got another movie coming on in three weeks, they need that theater owner.

George Lucas And the theater owners and the distributors were always fighting over how much of the box office they would get for each movie, and for how long it had to run, and there would be a bidding war between different theaters. So they didn't trust each other.

The theater owners said, "Well, if you're going to save \$1,500 per print, who gets that money?" And the other question was "Who's going to pay for these digital projectors?"

Rick McCallum Which cost \$150,000 each. You have to remember, the theaters have to keep the film projector right next

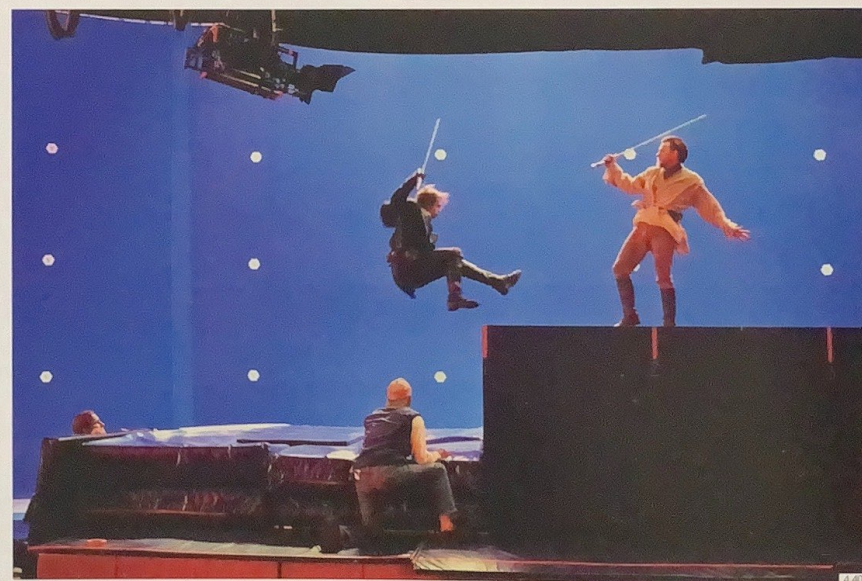
4.408 *The fight continues outside the building and onto pipes that lead to the lava collection panels. Aaron McBride's concept art for shot MC B 270 shows the former friends balancing precariously on the pipes.*

4.409 *Christensen and McGregor were keen to perform their own stunts where possible. This scene of Darth Vader falling was filmed but was not used in the final cut.*

4.410-412 *Final frames of the fight on the pipes in the intense heat of the volcanic planet.*

4.413 *Aaron McBride's concept art for shot MC B 430 shows a dramatic scene from the duel, where Darth Vader has a significant advantage as Obi-Wan is falling.*

4.414 *Concept art by Aaron McBride for shot MMC 950 showing the Jedi battle along the lava collection panel. They continue their fight as the lava melts the support arm.*



4.409



4.410



4.411



4.412



MCB.430
A.M. & BRIDE





4.415

to the digital projector, because most studios were releasing their movies on film.

Paul Duncan The major Hollywood studios formed Digital Cinema Initiatives in 2002, and it took them three years to issue industry standards for digital projection—in July 2005, after Episode III was released—and then they introduced the virtual print fee in November of that year.

George Lucas For that, the studios take the money, \$1,500 a film print, which is about a billion dollars a year, and put that into an account. The theater owners essentially borrow from this fund to buy the projectors, and then they pay back each time they play a movie. The distributors agreed to this because they didn't have to pay all the transport costs, and they didn't want to keep making both film prints and digital prints.

If you look at the figures, the number of digital screens in the US goes from 300 in 2005 to 16,000 in 2010, and to 36,000 in 2014. Pixar and Jim Cameron were key players in all this because they

made films like *Up* (2009) and *Avatar* (2009) in 3-D, and people paid more money to see 3-D movies. But the real hurdle was the business part of it, not the technical part.

Life

Paul Duncan One of the nice things about doing these books over the past few years is that I see that the people working for you now, and those who worked for you in the past, have a great deal of love and loyalty for you and your work. They've had tough but brilliant times.

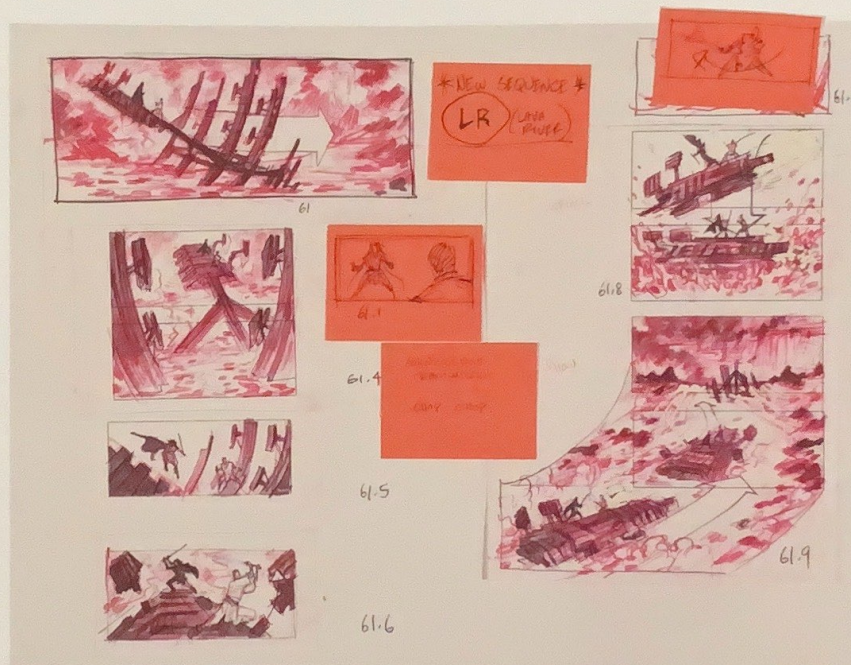
George Lucas We've been through a war together—there is no other way to describe it. It's intense. We got through it and had the good times, and the bad times, and the pressure, and all the other stuff that goes on through that. They're a good group of people.



4.416

“When Obi-Wan and Anakin fight, they destroy the controls the Mustafarians use to stabilize the planet, and the planet goes nuts.”

Roger Guyett



4.417

4.415 Final frame showing Obi-Wan and Darth Vader continue their struggle as they ascend the lava collection panel arm after it has fallen into the lava river.

4.416 Filming the lava collection panel sequence with stunt doubles. A minimal set was constructed for the panel arm, which was on a rig that could be pulled up to a vertical position. Another part of the set is on the right foreground, so that the cast and crew can quickly set up other shots on the same stage.

4.417 Many alternative action beats were explored. Derek Thompson's storyboard for the lava river sequence shows the lava collection panel falling into the river, then level out with the arm floating on the river, and Vader and Obi-Wan continuing their fight on the arm as it heads toward the waterfall.

4.418 Ryan Church's early concept of the duel along the lava collection panels shows the protagonists in a highly precarious

position as the arms are deteriorating rapidly in the heat of the lava river (October 31, 2002).

4.419 Almost two years later Church reimagined the scene by flipping the image, enlarging the figures, and changing the background.

4.420 Church shows Vader and Obi-Wan battling on the arm as it floats down the lava river (May 23, 2003).

4.421 In Alex Jaeger's concept the Jedi and Sith continue their fight to the death by jumping between the unstable floating panels that are part of Mustafar's mining equipment (December 13, 2002).

4.422–424 As the collection panel plunges over the lava waterfall Darth Vader and Obi-Wan Kenobi narrowly avoid death by leaping onto droids working on the lava river. This does not hinder the intensity of their conflict.



4.418

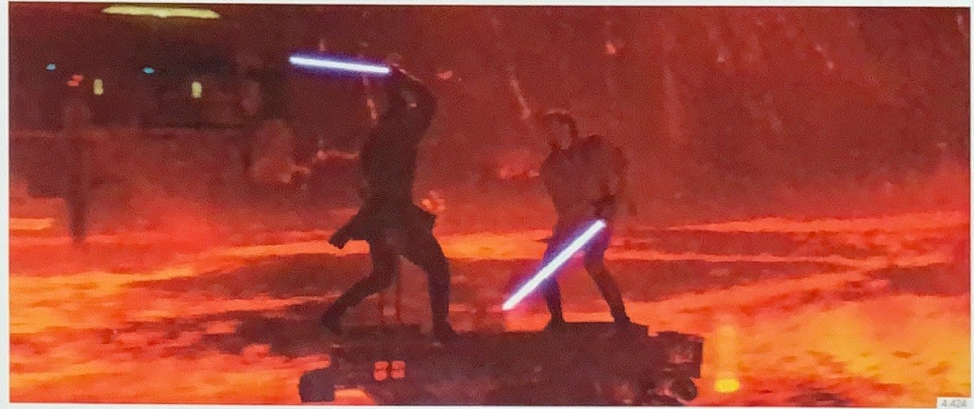


4.419



4.420





PLATFORM

VOULT'S EDGE

Ani legs -
dark side

Obi wins "trick"
cause of
dark side?

1st side 2

1st side 1 force
force = trick

Obi's
rings wrapped

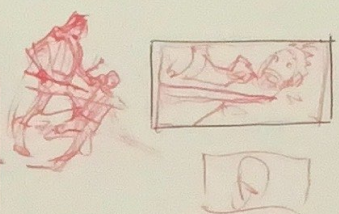
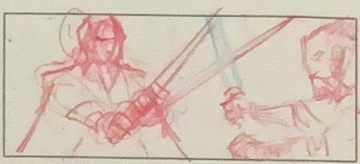
kill me

(and light saber)
utility belt
padding disintegrated
voice of Obi-wan?

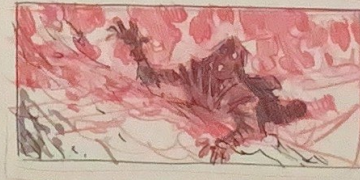
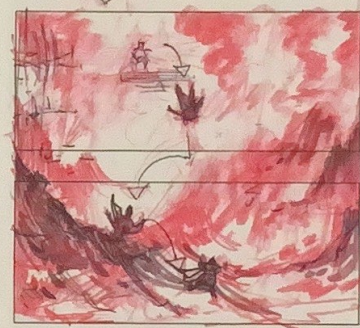
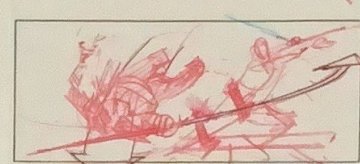


Suber of/on
trick

did you bring
the spare?



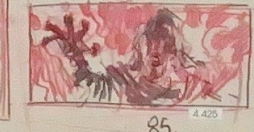
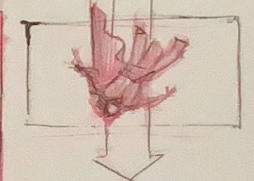
B-5



82

83A

83B



84

BURN, ANI, BURN

85.

**"You were my brother, Anakin.
I loved you."**

Obi-Wan Kenobi



4.420

4.425 Derek Thompson's unused storyboard idea where Vader and Obi-Wan duel on a raised platform. Obi-Wan feints, cuts off Vader's legs, and Vader falls onto the lava bench below, where he burns in the heat.



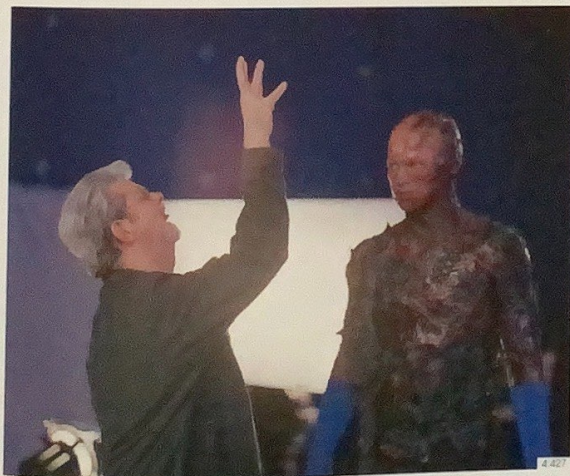
4.428

4.426 In the movie, Darth Vader leaps from the lava river, trying to go over Obi-Wan, but Obi-Wan severs his legs at the knees and cuts off his left arm. Obi-Wan anticipates Vader's move because he had successfully carried out the same maneuver on Darth Maul in Episode I.

4.427 Lucas explains how Hayden Christensen should claw himself up the bank of the lava river. Christensen is in burn makeup with both arms covered in blue. Vader's left arm has been severed, and his mechanical right arm will be added in postproduction.

4.428 Obi-Wan Kenobi: "You were the Chosen One! It was said that you would destroy the Sith, not join them!"

4.429 Visual script art by Ryan Church and others for scene 160e showing Darth Vader's defeat by Obi-Wan.



4.427



4.429



4.430

Paul Duncan Doug Chiang, Ryan Church, and others described to me how much freedom you gave them and allowed them to do the best work of their lives. The whole environment that you've created—Lucasfilm, the Ranch, ILM, Skywalker Sound—has been inspirational, so I wonder why you passed control of Lucasfilm on to Disney in 2012?

George Lucas At that time I was starting the next trilogy; I talked to the actors and I was starting to gear up. I was also about to have a daughter with my wife. It takes 10 years to make a trilogy—Episodes I to III took from 1995 to 2005.

Paul Duncan So if you started 2012, you'd finish 2022.

George Lucas I'd still be working on Episode IX! In 2012 I was 69. So the question was am I going to keep doing this the rest of my life? Do I want to go through this again? Finally, I decided I'd rather raise my daughter and enjoy life for a while.

I could have not sold Lucasfilm and gotten somebody to run the productions, but that isn't retiring. On *The Empire Strikes*

Back and Return of the Jedi I tried to stay out of the way, but I couldn't. I was there every day. Even though the people were friends of mine and they did great work, it wasn't the same as me doing it! It was like being once removed. I knew that probably wouldn't work again, that I'd be frustrated.

I'm one of those micromanager guys, and I can't help it. So I figured I would forgo that, enjoy what I had, and I was looking forward to raising my daughter. Also, I wanted to build a museum, which I'd always wanted to do, so I was thinking, "If I don't do this now, I'll never get that done."

I've spent my life creating *Star Wars*—40 years—and giving it up was very, very painful. But it was the right thing to do. I thought I was going to have a little bit more to say about the next three because I'd already started them, but they decided they wanted to do something else.

Things don't always work out the way you want it. Life is like that.

"The real fun of Episode III is the fact that it connects all the dots. Finally, you can see how Episode I relates to Episode VI and how they all come together."

George Lucas



4.432



4.431

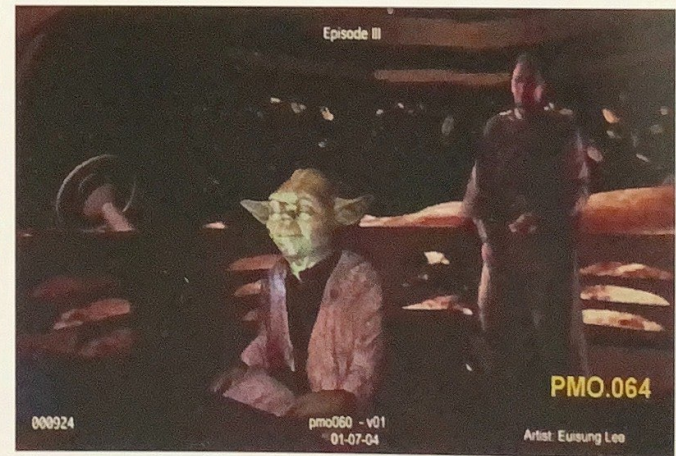
4.430 Iain McCaig's concept art depicting Darth Vader's broken body being retrieved from the lava by droids (December 4, 2002).

4.431 Visual script art by Ryan Church for scene 164 where the Emperor locates and rescues Darth Vader. The clone troopers in the background are fetching a medical capsule.

4.432 Final frame of the Emperor rescuing Darth Vader.

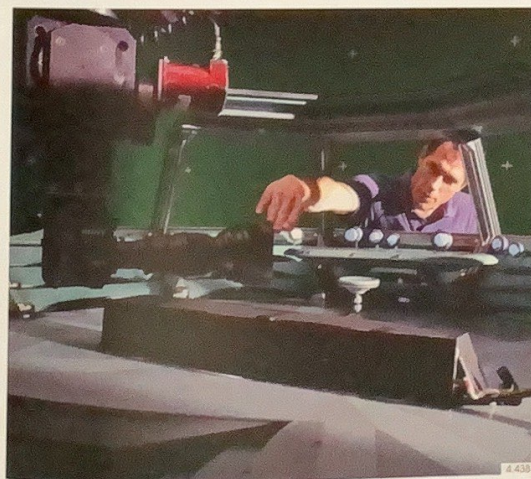
4.433 Aaron McBride's concept for shot MLP 920 showing the Emperor's shuttle on the Mustafar landing platform.







4.437



4.438

4.434 Erik Tiemens's concept for the asteroid Polis Massa (November 7, 2002). Tiemens: "This is an homage to early science fiction films and to Life magazine illustrations by Chesley Bonestell of astronauts visiting the moon. There is a shield to protect the base from asteroids."

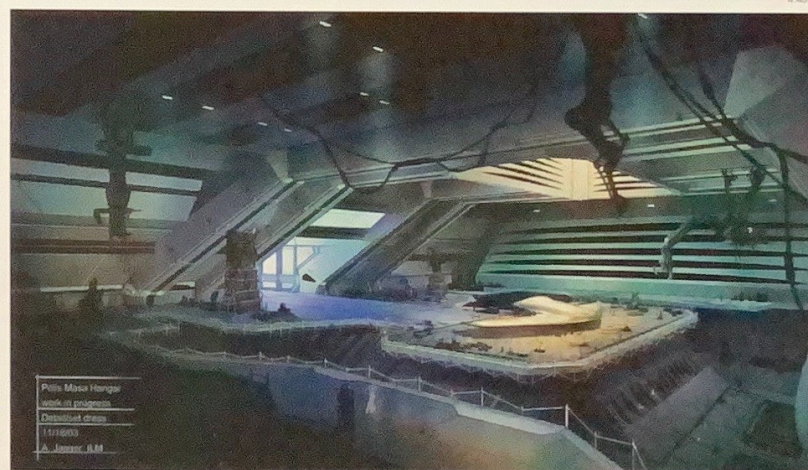
4.435 Ryan Church's art for Yoda in the observation dome (June 13, 2003). The part of the scene where Yoda meditates and communicates with Qui-Gon's spirit was deleted from the movie.

4.436 Enxuang Lee's animatic for shot PMO 06-4 showing Bail Organa (right) arriving as Yoda meditates (January 7, 2004).

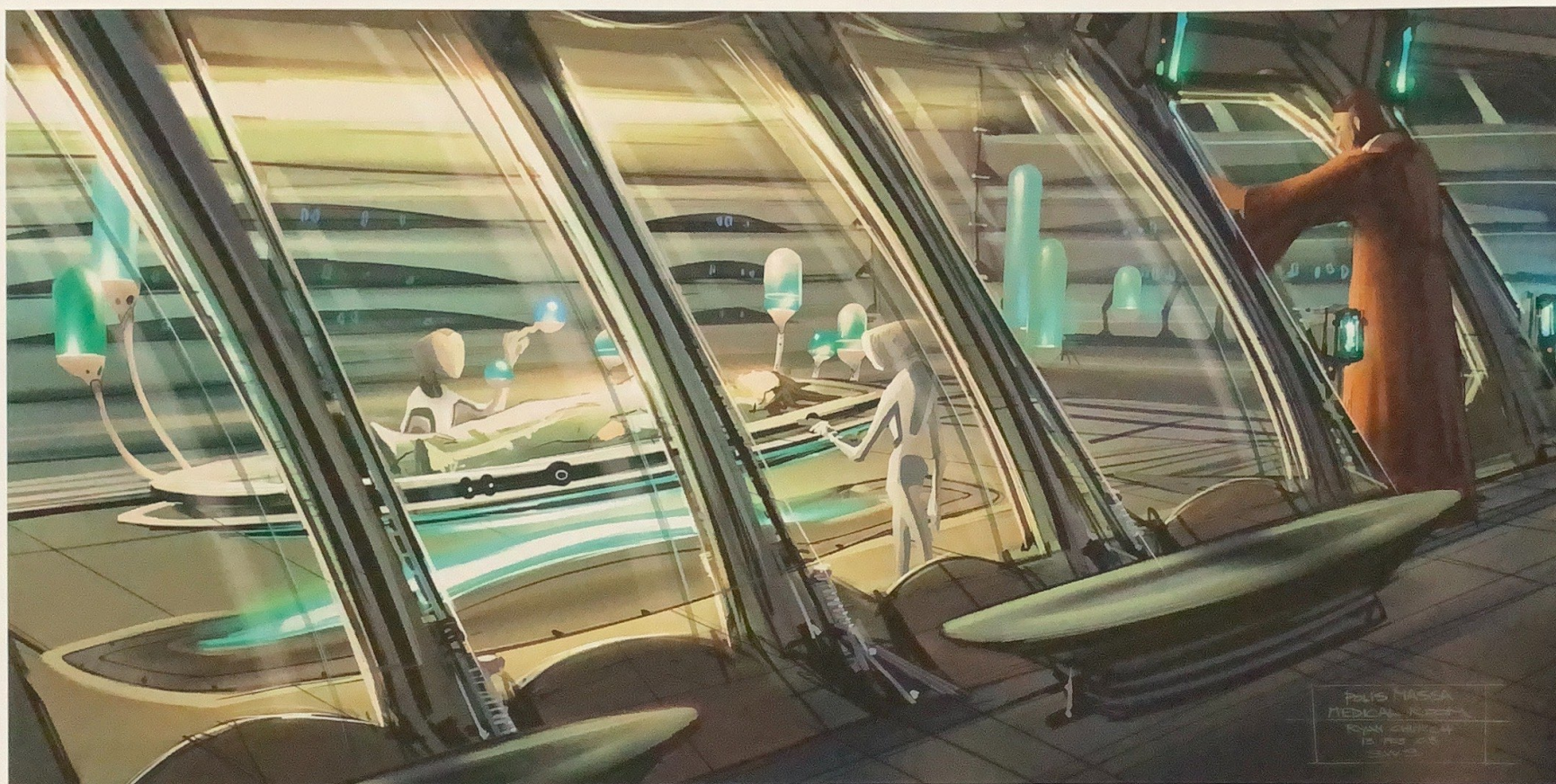
4.437 Tiemens's concept artwork for the conference room on Polis Massa (January 17, 2003).

4.438 H.M. built a quarter-scale miniature for the Polis Massa observatory set, with the data display screens added digitally. Here first assistant camera operator Dennis Rogers adjusts the camera.

4.439 Obi-Wan brings the unconscious Padmé to Polis Massa. Alex Jaeger's concept for the Polis Massa hangar was not used (November 18, 2003).



4.439



4.440

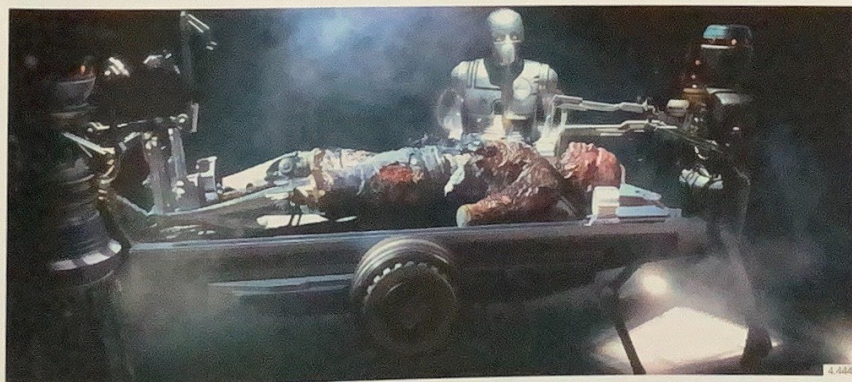
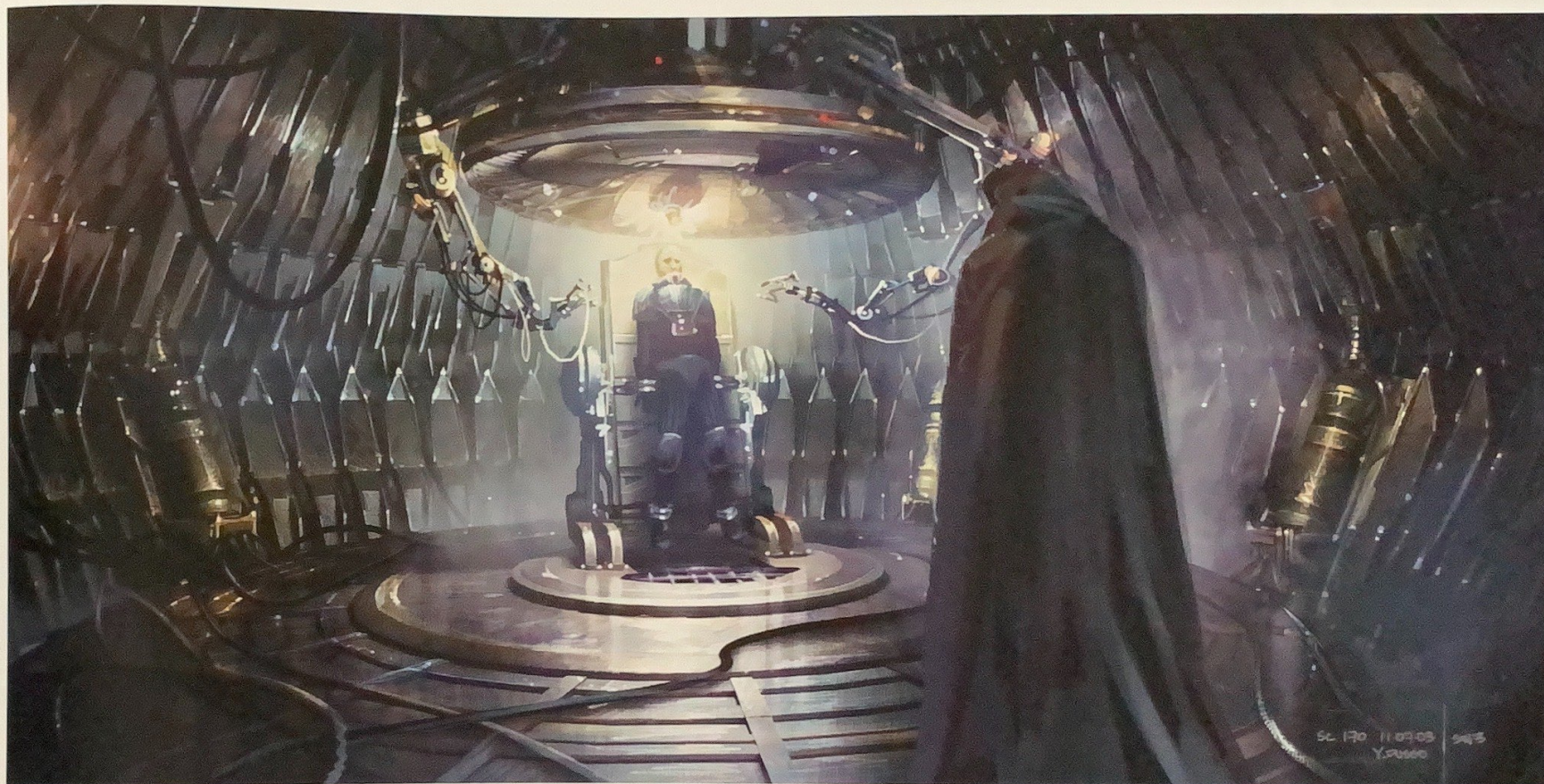


4.441

- 4.440 Ryan Church's concept for the Polis Massa medical room where Padmé is being looked after (February 13, 2003).
- 4.441 Erik Tiemens's concept for a Polis Massan medical droid, which informs Yoda, Obi-Wan, and Bail Organa that Padmé has lost the will to live, and that they must operate immediately if they are to save the twin babies (July 31, 2003).
- 4.442 Obi-Wan comforts Padmé as she is about to deliver her twins.
- 4.443 Yannick Dusseault's concept for scene 170, where the critically wounded Darth Vader is fitted with a life-sustaining suit (November 7, 2003). There is a clear contrast between the light and warmth of Padmé's medical room contrasts with the foreboding darkness and clinical robotic reconstruction of Vader.
- 4.444 Sinister droids operate on Darth Vader, cleaning his wounds and fitting new prosthetics.
- 4.445 Prosthetic makeup fabrication technician Kerrin Jackson puts the finishing touches to Hayden Christensen's full burn makeup.



4.442

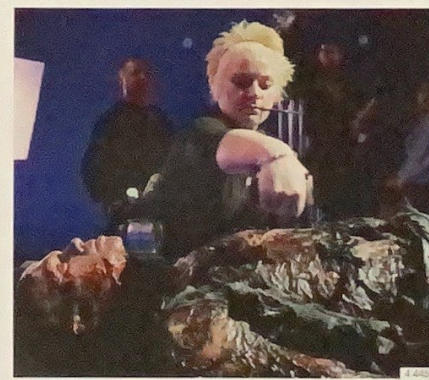


4.446 Before the script was written, the design team was given the freedom to imagine possible scenarios. Here Derek Thompson has Vader find Padmé and their babies, and use the Force to dispatch the Jedi who are protecting them (December 20, 2002).

4.447 A midlife droid delivers Padmé's twins; Padmé names them Luke and Leia. Padmé's last thoughts before she dies are of Vader. "Obi-Wan, there's good in him. I know there's still..."

4.448 In this final frame, Darth Vader is imprisoned as the headpiece descends upon his disfigured face. We will not see this face again until the end of Episode VI, when his features are revealed to Luke.

4.449 Warren Fu's concept art shows Darth Vader being constructed as if he were in a droid factory (January 17, 2003). The Emperor looks on in the background as the mask descends.





Storyboard
Maga Thompson 12-20-15, Syd 3

4.446

“Just at the moment that he’s born, she dies. That moment where he takes his first breath as Darth Vader, which is the symbol of him coming alive, is followed by the scene of her saying there’s still good in him, and dying.”

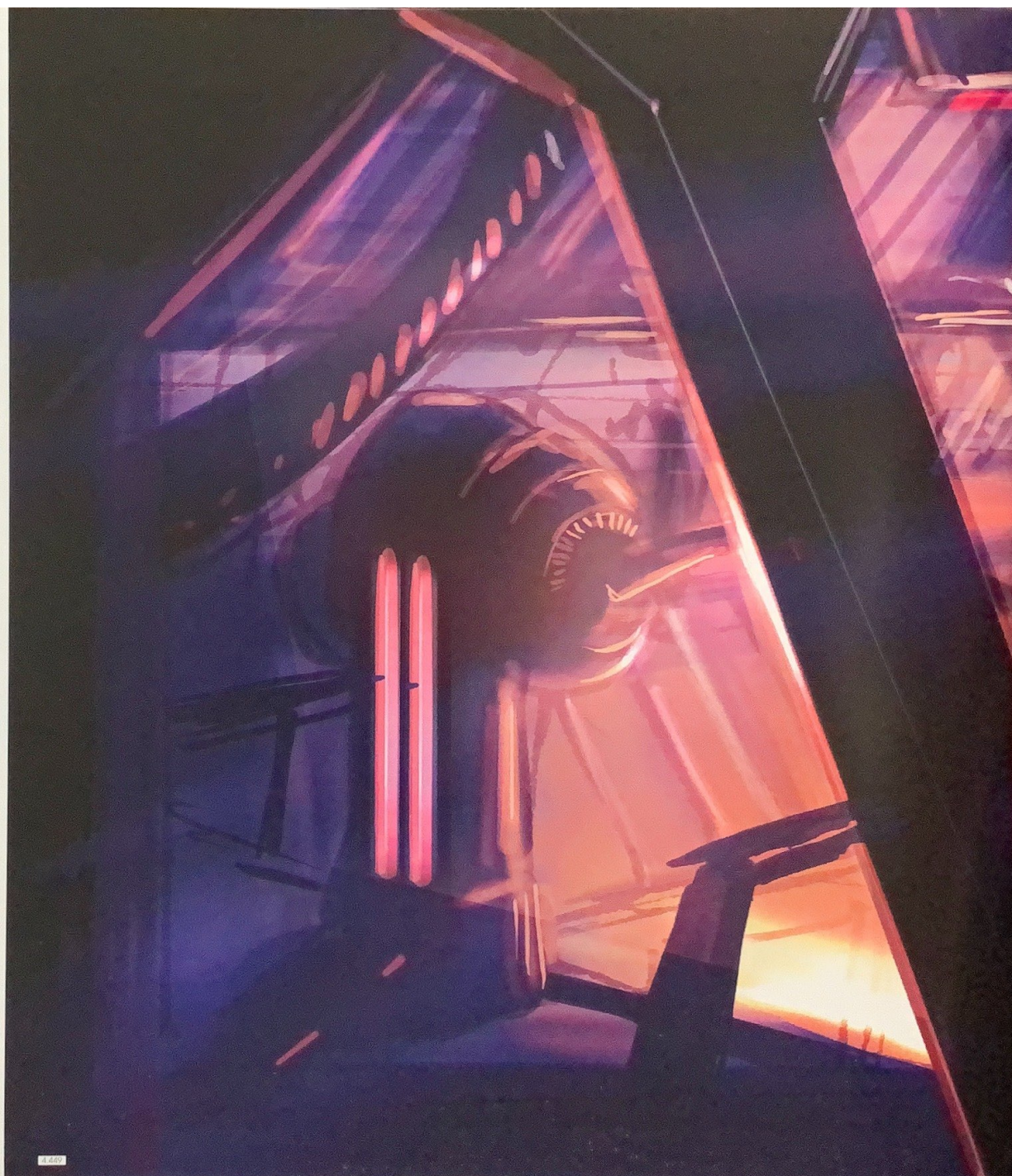
George Lucas



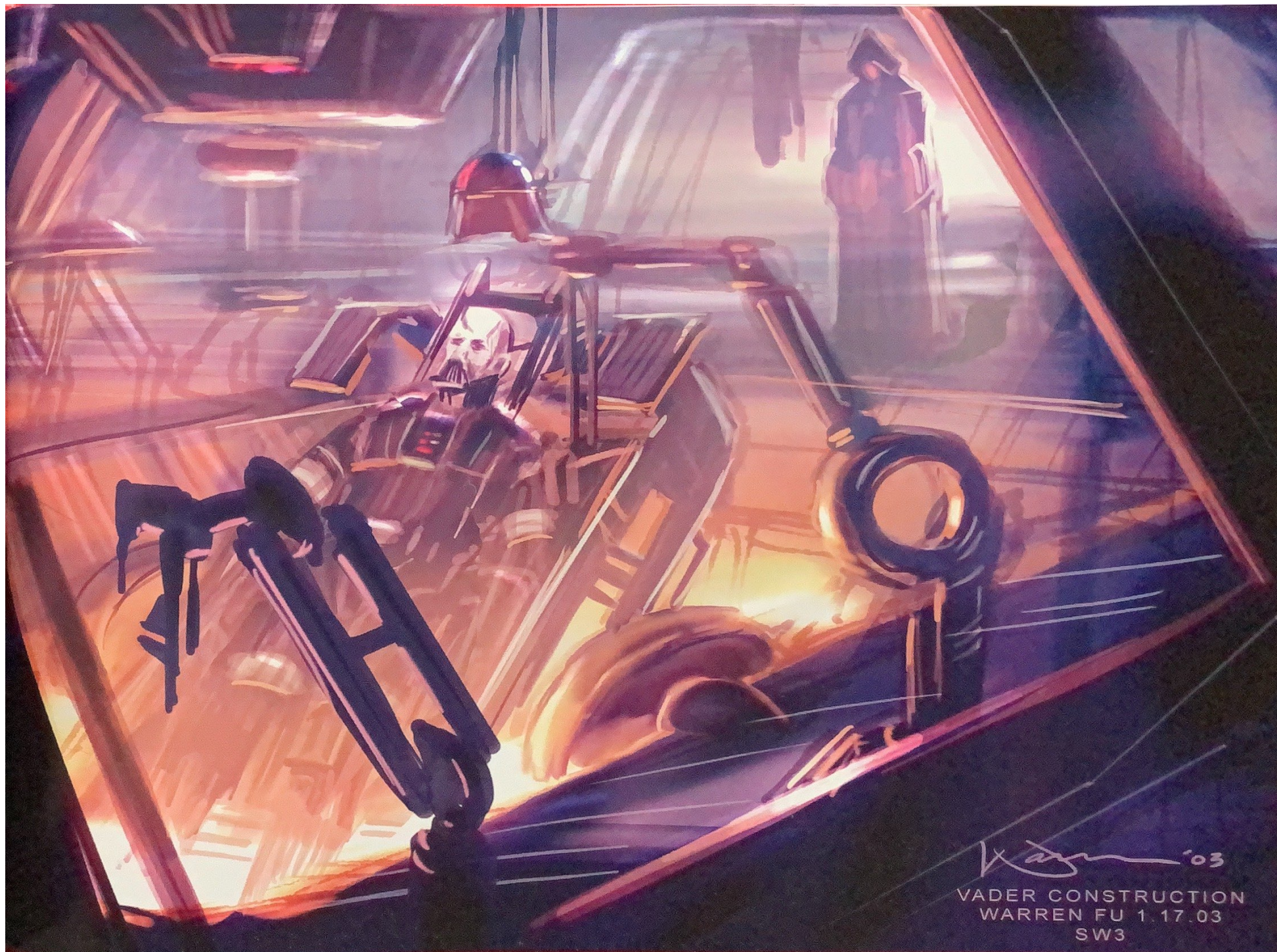
4.447



4.448



4.449



Warren '03
VADER CONSTRUCTION
WARREN FU 1.17.03
SW3

"I wanted to hint that the mask was painful to wear, with lots of pointy things that poke Vader as it interfaces with him."

Ryan Church



The Chosen One

George Lucas When writing the movies, I tried to make sure that aliens and droids got killed, but not people.

Paul Duncan A lot of stormtroopers died.

George Lucas That's right, but you didn't know they were people. We did kill three humans and that was unfortunate. I was always bothered by it.

Paul Duncan When was that?

George Lucas On the Death Star, when Han and Luke go into the prison with Chewie to rescue Leia, they shoot three Imperial guys. The guards drew their guns and fired first, but it's still a shame.

Paul Duncan Really?

George Lucas Yeah. We very consciously didn't kill very many humans in those movies.

Paul Duncan What about the stormtroopers? They look robotic, but they're not.

George Lucas How do you know what they are?

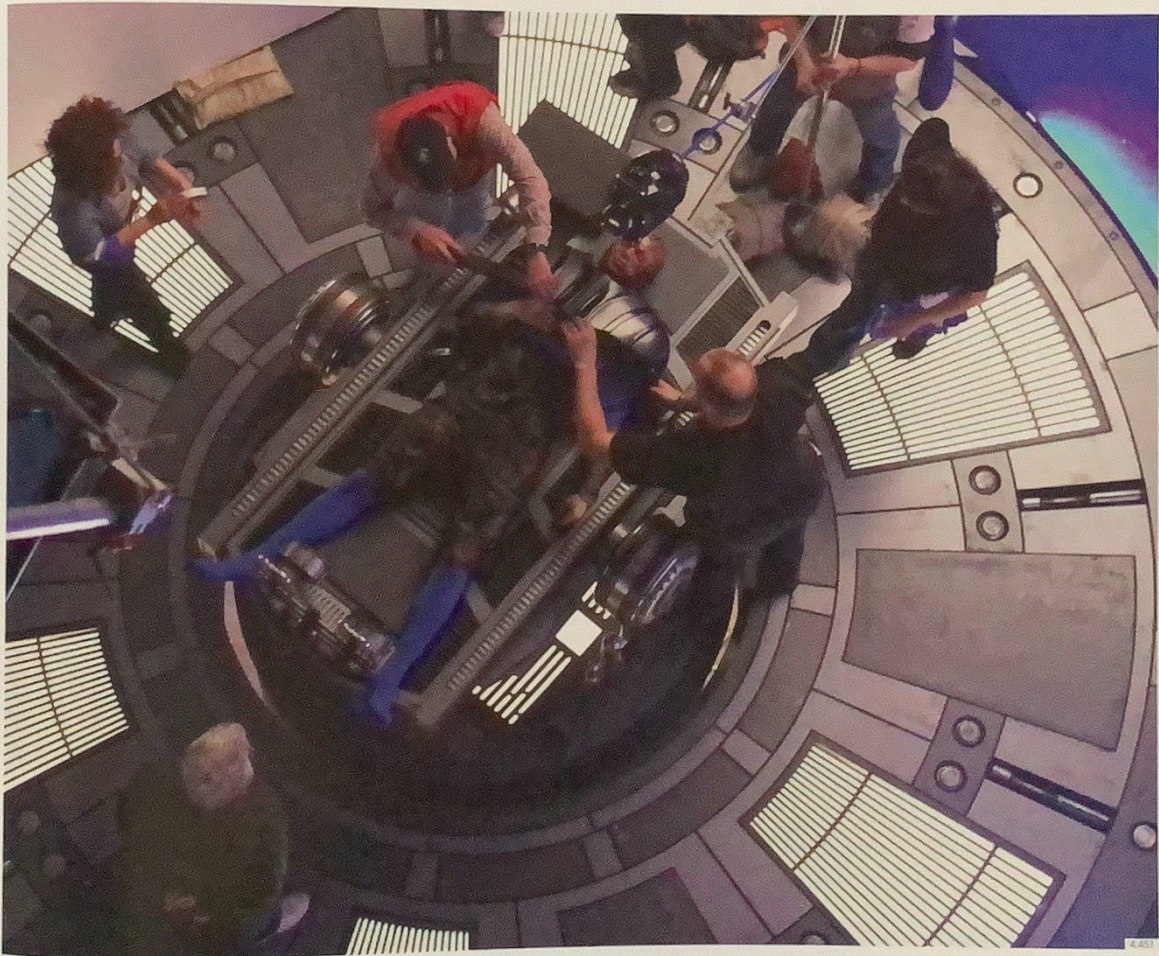
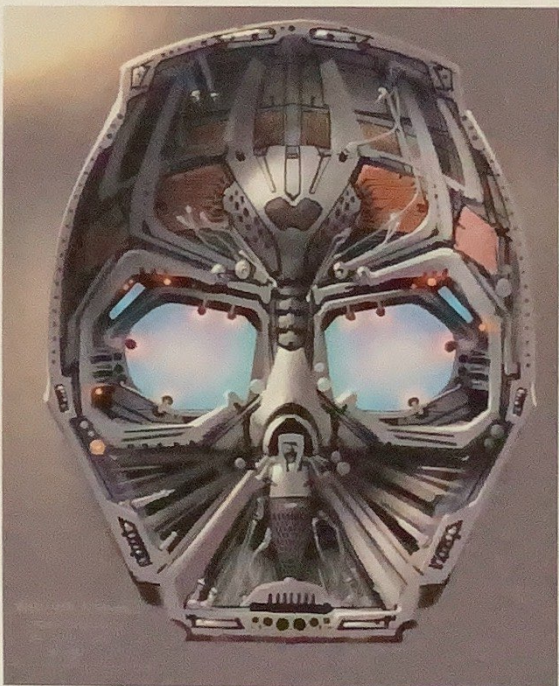
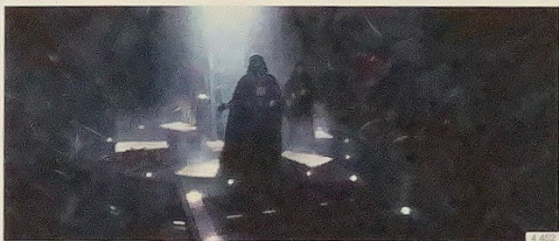
4.450 *Darth Vader's transformation is complete. George Lucas: "When watching the films in the right order, you get the thrill of finding out that Anakin becomes Darth Vader, so it's a big surprise."*

4.451 *Preparing to shoot a close-up of Christensen receiving the helmet as Lucas (bottom left) oversees proceedings. Note that the set's flooring is the logo of the Galactic Empire.*

4.452 *In this final frame, the Emperor tells Darth Vader that Padmé died by his hand. Vader cries out in despair. The Emperor*

relishes the moment, knowing that Vader will be his willing slave from this moment on.

4.453 *Ryan Church's concept art shows the interior of the mask as it descends (January 26, 2004). It not only demonstrates the complexity of the technology that Darth Vader needs to survive within the suit but it also shows his point of view as he becomes imprisoned in his new identity.*





4.454



4.455



4.456

4.454 Erik Tiemens's concept for the funeral entourage returning Padmé's body to Naboo (February 6, 2003). Tiemens: "I had some conceptual dialogue with Iain McCaig, who had some 19th-century reference of a ship going to an island. George wanted me to cool down the colors to more of a dawn."

4.455 Final frame of Padmé's funeral procession.

4.456 Iain McCaig's concept for Padmé's burial dress, which earned a "Fabulouso" from Lucas (May 5, 2003).

4.457 Final frame of Padmé. In her hands is the pendant that Anakin carved for her. Natalie Portman: "Costume designer Trisha Biggar wanted to get an ocean sense. Someone said that it was very 'Ophelia,' and with the flowers and the hair it does look like I'm drowning."

"I was there when Padmé was born as a character and now I was burying her. The flowers are tears."

Iain McCalg



Paul Duncan Did you have a different idea of what they were?
George Lucas Yeah. They started out as clones. Once all the clones were killed, the Empire picked up recruits, like militia. They fought, but they weren't very good at what they did.
Paul Duncan That's why they kept missing.
George Lucas That's why they kept missing. Then after the Rebels won, there were no more stormtroopers in my version of the third trilogy.

I had planned for the first trilogy to be about the father, the second trilogy to be about the son, and the third trilogy to be about the daughter and the grandchildren.

Episodes VII, VIII, and IX would take ideas from what happened after the Iraq War. "Okay, you fought the war, you killed everybody, now what are you going to do?" Rebuilding afterwards is harder than starting a rebellion or fighting the war. When you win the war and you disband the opposing army, what do they

do? The stormtroopers would be like Saddam Hussein's Ba'athist fighters that joined ISIS and kept on fighting. The stormtroopers refuse to give up when the Republic win.

They want to be stormtroopers forever, so they go to a far corner of the galaxy, start their own country, and their own rebellion.

There's a power vacuum so gangsters, like the Hutts, are taking advantage of the situation, and there is chaos. The key

person is Darth Maul, who had been resurrected in *The Clone Wars* cartoons — he brings all the gangs together.

Paul Duncan Was Darth Maul the main villain?

George Lucas Yeah, but he's very old, and we have two versions of him. One is with a set of cybernetic legs like a spider, and then later on he has metal legs and he was a little bit bigger, more of a superhero. We did all this in the animated series; he was in a bunch of episodes.

“We had done a shot of Yoda’s little escape pod landing on Dagobah. The door opens and there is Yoda looking out on the landscape. We built a swampy tabletop miniature for the immediate foreground, and we had little creatures scuttling on the ground. Unfortunately, George had to cut the scene for time.”

John Knoll



4.408



4.409



4.410



4.458 Erik Tiemens's concept for Yoda's pod arriving on Dagobah (January 20, 2004).

4.459 Tiemens's concept for Yoda landing on Dagobah (January 20, 2004). Alex Jaeger: "A problem arose with the pod design, which was requiring Yoda to walk down a long ramp. I saw the fins as the solution to the problem, and came up with the idea that they would fold outward to create a shorter ramp and a more elegant landing."

4.460 Tiemens's concept shows Yoda as a small and lonely figure in the dark and oppressive swamp (January 13, 2004).

4.461 Ryan Church's concept for Dagobah (January 8, 2004). Yoda looks upon his new home as he begins his exile. Rick McCallum: "One of the most painful things for me that were cut out of the movie is a scene where Yoda arrives on Dagobah. It's no more than 30 seconds. The ship arrives. You establish the planet. And I was heartbroken when we didn't put it in the movie. I begged George to include it, but I understand the reasons why he didn't."

Darth Maul trained a girl, Darth Talon, who was in the comic books, as his apprentice. She was the new Darth Vader, and most of the action was with her. So these were the two main villains of the trilogy. Maul eventually becomes the godfather of crime in the universe because, as the Empire falls, he takes over.

The movies are about how Leia — I mean, who else is going to be the leader? — is trying to build the Republic. They still have the apparatus of the Republic but they have to get it under control from the gangsters. That was the main story.

It starts out a few years after *Return of the Jedi* and we establish pretty quickly that there's this underworld, there are these offshoot stormtroopers who started their own planets, and that Luke is trying to restart the Jedi. He puts the word out, so out of 100,000 Jedi, maybe 50 or 100 are left. The Jedi have to grow again from scratch, so Luke has to find two- and three-year-olds, and train them. It'll be 20 years before you have a new generation of Jedi.

By the end of the trilogy Luke would have rebuilt much of the Jedi, and we would have the renewal of the New Republic, with Leia, Senator Organa, becoming the Supreme Chancellor in charge of everything. So she ended up being the Chosen One.

Hope and Faith

George Lucas The midi-chlorians started the birth process in Anakin's mother. The Whills communicated the command to the midi-chlorians, which activated the DNA that germinated the egg. That's why Anakin doesn't have a father. He was, in a bizarre and metaphorical way, touched by God, but in this case they happened to be one-celled animals.

Paul Duncan It reminds me of Perseus and Heracles and other heroes of mythology, who receive their powers from the gods, usually because Zeus fathered them. Zeus is an absent father. The theme of fatherhood, or lack of it, runs through the saga. Qui-Gon doesn't quite become a father figure for Anakin, I don't think, but he's certainly somebody in authority who he then loses. Then Obi-Wan becomes a father figure, and later Palpatine. The theme continues with Luke, and even Jango Fett — the Kaminoans are making all these clones of him yet he asks for one to be unaltered so that he can raise him.

George Lucas Jango was a father to thousands, but he wanted a son that was not altered to be obedient. He wanted

him to have his own personality and his ability to be self-sufficient.

Paul Duncan Do the other characters, Qui-Gon, Obi-Wan, Palpatine, have that fatherly feeling also?

George Lucas I think so. I think ultimately they want to mentor someone, to pass on their knowledge and training to someone else — that's a part of fatherhood. I don't know whether you'd call it fathering, but it comes very close. Mentor and father are pretty much the same issue.

Paul Duncan Palpatine acts in a fatherly fashion.

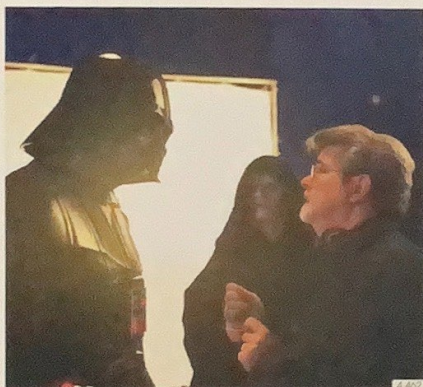
George Lucas He's acting as a father, but what he's trying to do is recruit Anakin to be his trainee, his apprentice. And he's doing that because he knows that he has a high midi-chlorian count, so he could be a powerful Sith Lord, even more powerful than he is.

It's like he's trying to build a better spaceship or a better gun, more than it is he's a father. He sees him as a weapon for the dark side.

Paul Duncan So he's a false father, wanting to control him. Obi-Wan becomes more of an elder brother.

"Nobody thinks of themselves as bad, not even the worst people, and they rationalize their behavior to say that we are doing good by killing all these people."

George Lucas



4.462 Lucas (right) directs Christensen (left) and McDiarmid in the scene where Vader and the Emperor oversee the construction of the Death Star.

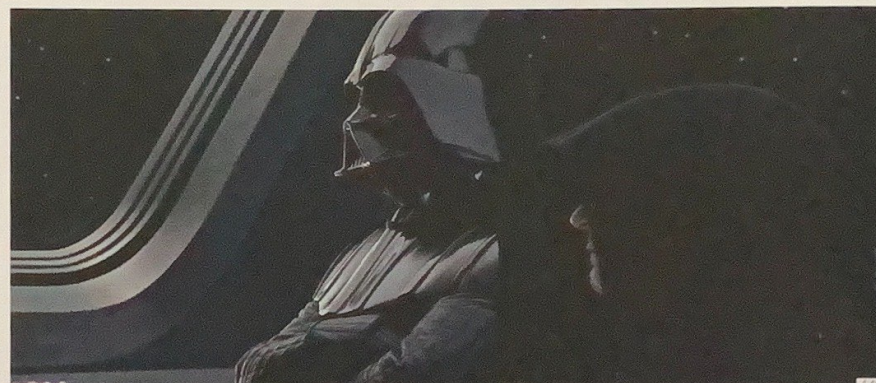
4.463 Darth Vader's helmet is being polished to ensure maximum shine.

4.464 Shooting the Death Star observation scene. While mainly green screened, a set was constructed for the control room below. Wayne Pygram (left) was cast in the role of Grand Moff Tarkin, a character played by Peter Cushing in Episode IV.

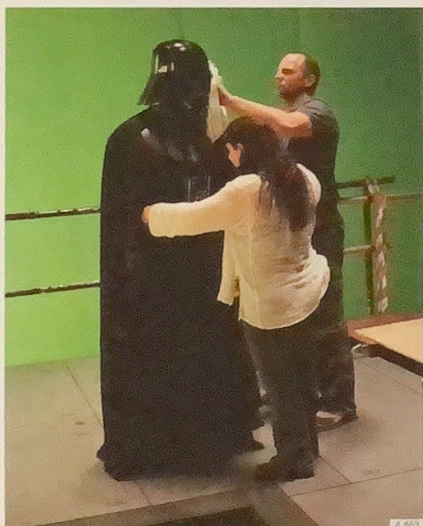
4.465 Final frame of the two Sith Lords.

4.466 Ryan Church's concept artwork for the construction of the Death Star shows spherical building ships (June 13, 2003). Church: "George didn't buy the building ships for scale reasons, so they were revised."

4.467 Final frame of Tarkin, the Emperor, and Darth Vader gazing out at the weapon of mass destruction that they will use to assert their dominance over their new Galactic Empire.



4.463



4.463



4.464

George Lucas He's like the reluctant elder brother saying, "You're not leaving him with me. I don't want to babysit anymore. I want to go out and do something good."

Paul Duncan Almost like a Han Solo.

George Lucas Except Obi-Wan has character and takes responsibility. Han Solo would've left him out on a desert planet somewhere.

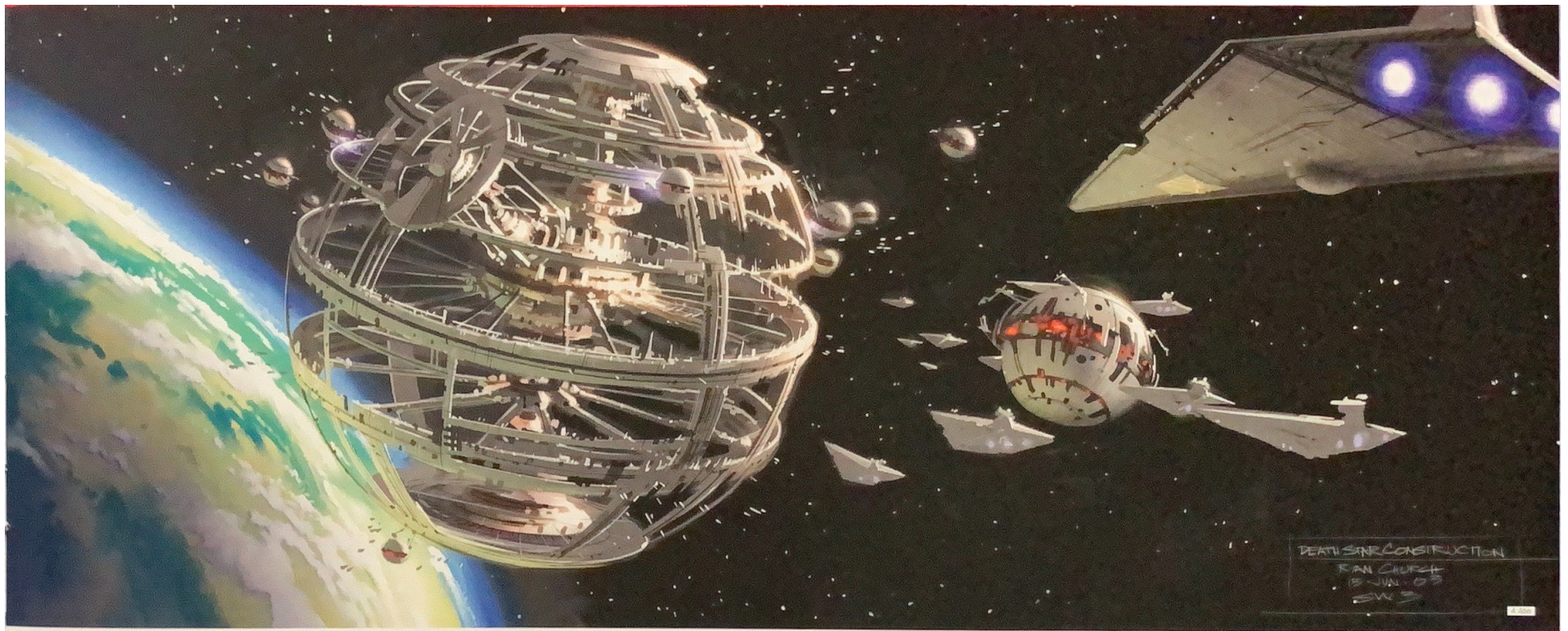
Paul Duncan When I first saw the films, I undervalued Obi-Wan because I followed Anakin's story, but Obi-Wan became more important to me the more I rewatch the movies.

George Lucas He changed the course of history because if he hadn't done battle with Anakin, Anakin would have become very powerful and would probably have gone on to be the Emperor of the universe.

Paul Duncan At the end of their duel, Obi-Wan is so personally attached to Anakin that he couldn't kill him. He couldn't bear to see him die.

George Lucas He's human. The Jedi are not superheroes. They're regular people like the rest of us. We all have midichlorians. We all have the Force within us. We can all do what the Jedi can do, but we're not trained. And the secret is training. You need somebody to train you because it won't come by its own. You don't say, "Oh gee, I think I can see the future now."

It's a fallacy that you can get something for nothing. If you have the talent and you work hard, then you'll achieve



something. But if you have the talent and you don't work hard, you won't.

Paul Duncan The landing platform scene when Obi-Wan says how proud he is of Anakin echoes the scene in *Return of the Jedi*, which is also on the landing platform, where Luke says, well, "I know there is good in you." He has faith in his father.

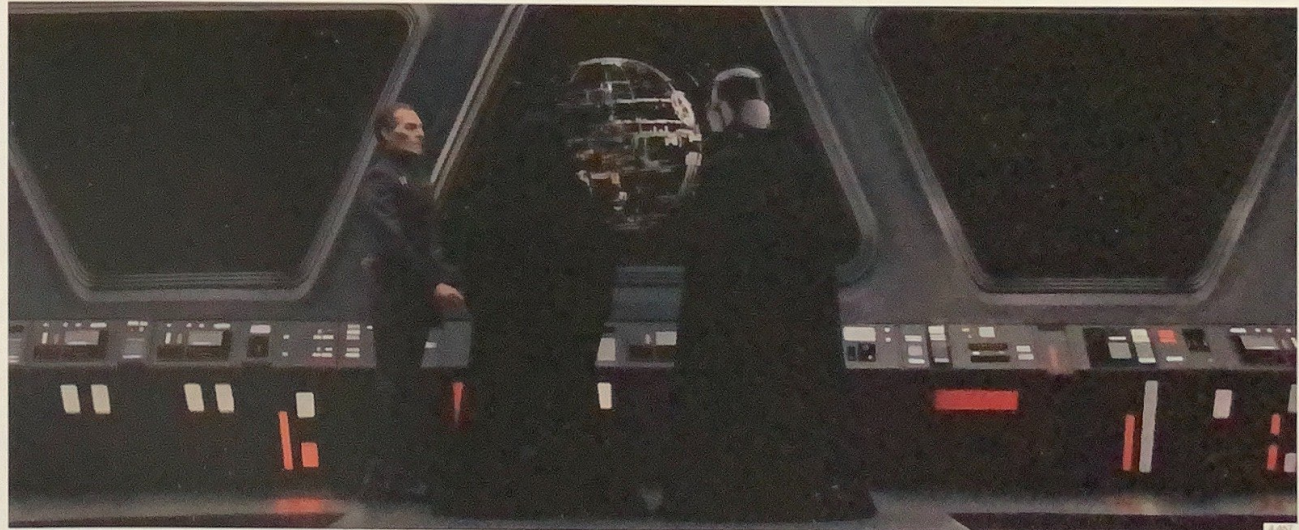
George Lucas There is a strain of faith running through the whole thing. When you're in this position as a mentor, whether you're an actual father or not, this person is your charge, but you have no control over how they're going to use that knowledge.

Paul Duncan There is faith and hope and charity in that whole exchange.

George Lucas Nothing is set in stone, especially with the next generation. You hope they'll turn out okay, you hope they do the right things, you hope you raised them right, and all that stuff. But there's no guarantee of anything. You never know what's going to happen. That's the challenge. And that's the drama, which has gone through history. It's all about what are they going to turn into.

Paul Duncan Even if you don't know how it's going to turn out, you still carry on mentoring because you have to live with hope.

George Lucas Hope and faith. I have faith that it's going to turn out all right, I hope it'll turn out all right. But either way, it's the same.



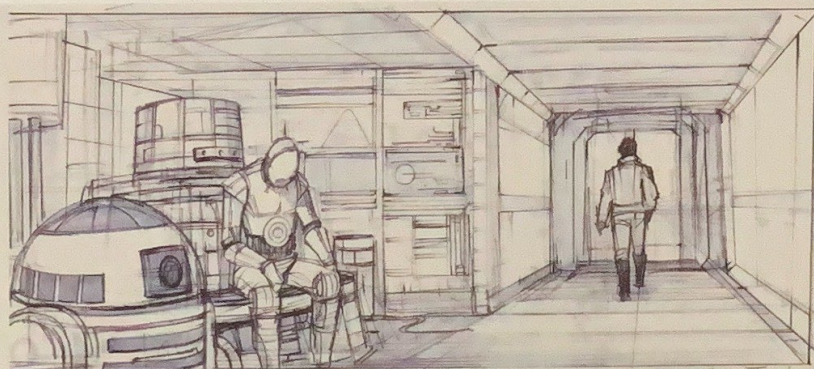
"Star Wars is not a simple morality play; it has to do with the powers of life as they are either fulfilled or broken and suppressed through the action of man."

Joseph Campbell



4.468

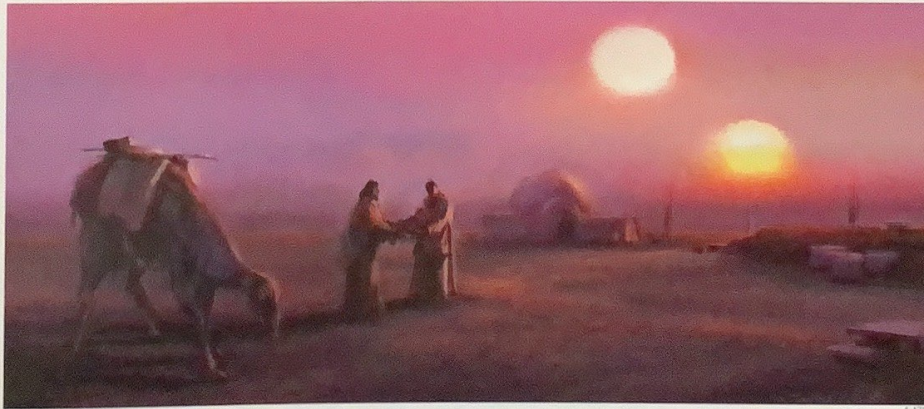
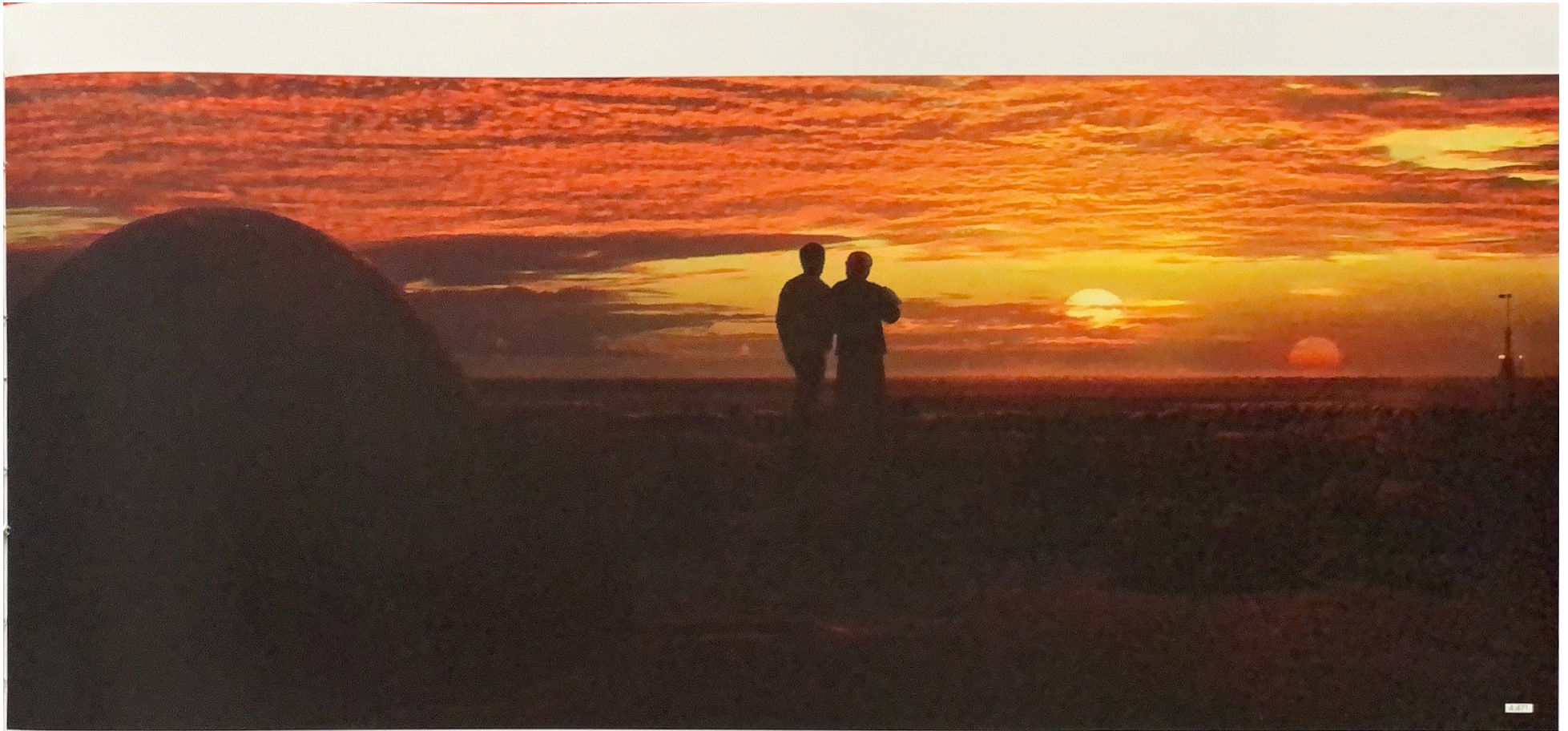
- 4.468 Ryan Church's concept for Alderaan (September 5, 2002). Church: "Since I was a kid I've wanted to do something that was so beautiful that when you hear Alderaan is destroyed in Episode IV, you go, 'Oh, crap!'"
- 4.469 Bail Organa tells Captain Antilles: "I'm placing these droids in your care. Treat them well. Clean them up. Have the protocol droid's mind wiped." Sang Jun Lee's concept art shows C-3PO's memory being erased (January 31, 2003).
- 4.470 Final frame showing Leia's adoption by Bail Organa and his wife Breha (Rebecca Jackson Mendoza). Bail pledged that "she will be loved by us." John Knoll: "We see a couple of wide vistas of the Alderaan cruiser approaching the city and landing. Then we see Bail Organa bringing in Leia. That entire Alderaan set was about eight feet of bench—that was it."
- 4.471 Final frame showing Uncle Owen Lars (Joel Edgerton) and Aunt Beru Lars (Bonnie Piesse) cradling baby Luke in their arms as the twin suns set over Tatooine. Erik Tiemens: "The movies became autobiographical in certain respects. I went on honeymoon to Tahiti with my wife and there was this spectacular sunset. I shot a panoramic and they ended up using the clouds for the digimatte with the twin suns."
- 4.472 Erik Tiemens's visual script art for scene 150 where Obi-Wan hands Luke to Owen on the Lars moisture farm. This scene was filmed in Tunisia while shooting Episode II. However, it was reshot, and in the movie it is Beru who receives baby Luke.
- 4.473 Preparing to shoot Obi-Wan's arrival at the farm. Lucas directs McGregor who is sitting astride a green pedestal, which will eventually become his mount, an eopie.



4.469



4.470

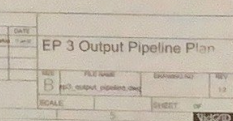


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<u>STILLS</u>			<u>CAMERA/FILM/LIGHTING</u> Camera Package Cio Plus 6 / LMI: Art Media Super Techno Crane Cio Art Media Lighting Package Cio AFM		
<u>MEDICAL</u> Unit nurse stand-by from 0730			<u>PROPRAT DEPT/RODINGS</u> Wired to Cio Effects Associates		
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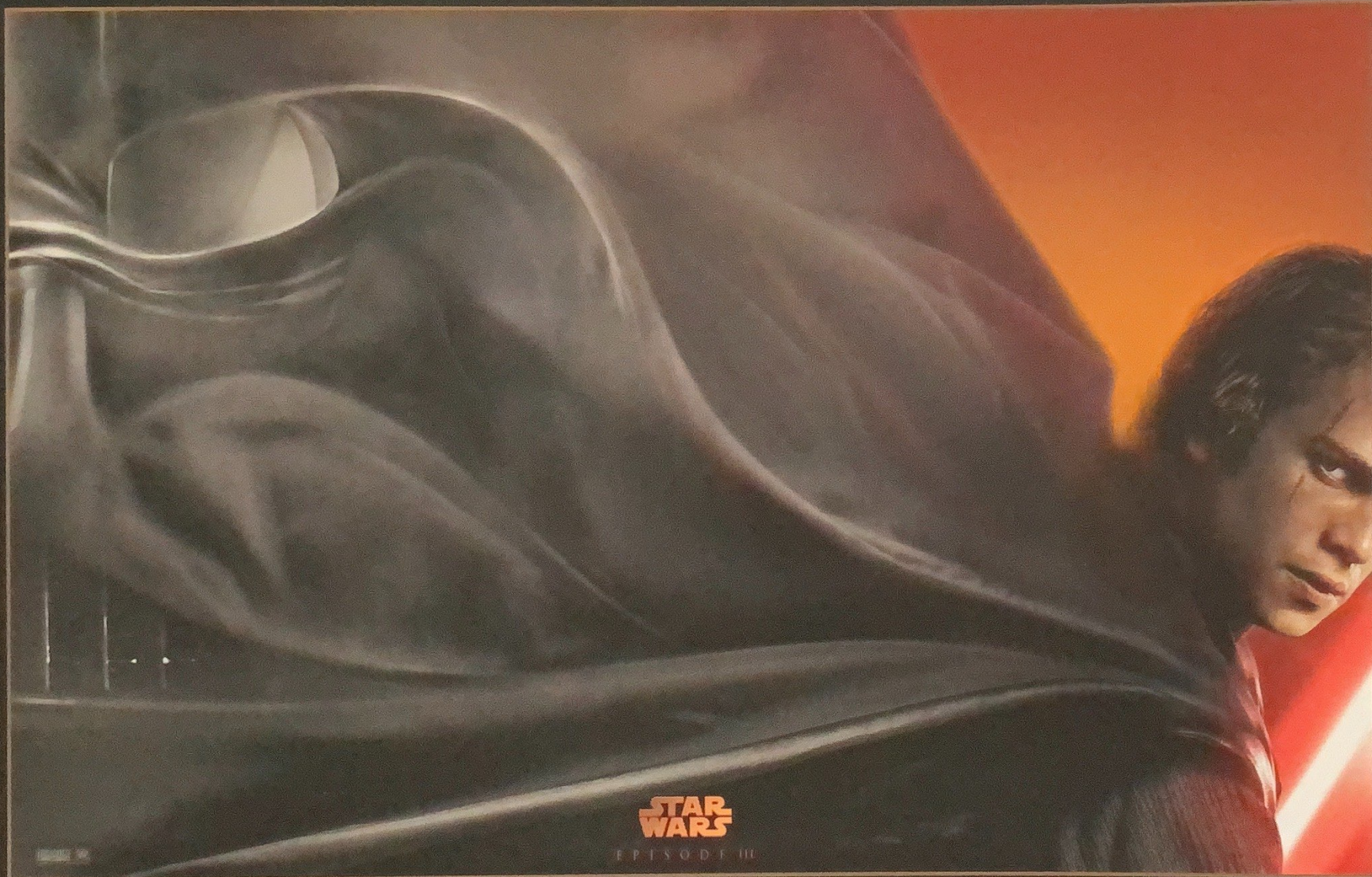
BRIAN DONOVAN - Production Manager

A screenshot of a Gantt chart interface. The chart displays a single task named 'GRL' at the bottom. Above the task bar, a list of sub-tasks or milestones is shown, each associated with a colored bar of varying length. The items in the list are: 'Shot Count' (blue), 'Anim' (green), 'Anim Complete' (yellow), 'Newly Based Out of Car' (orange), 'Back in Car/Now in Seat' (red), 'Shot Count' (blue), and 'Anim' (green). The bars are stacked vertically, with the 'Shot Count' bar at the bottom and the 'Anim' bar at the top. The task bar at the bottom is labeled 'GRL' and 'needs to shoot Anim'.

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STAR
WARS

EPISODE III

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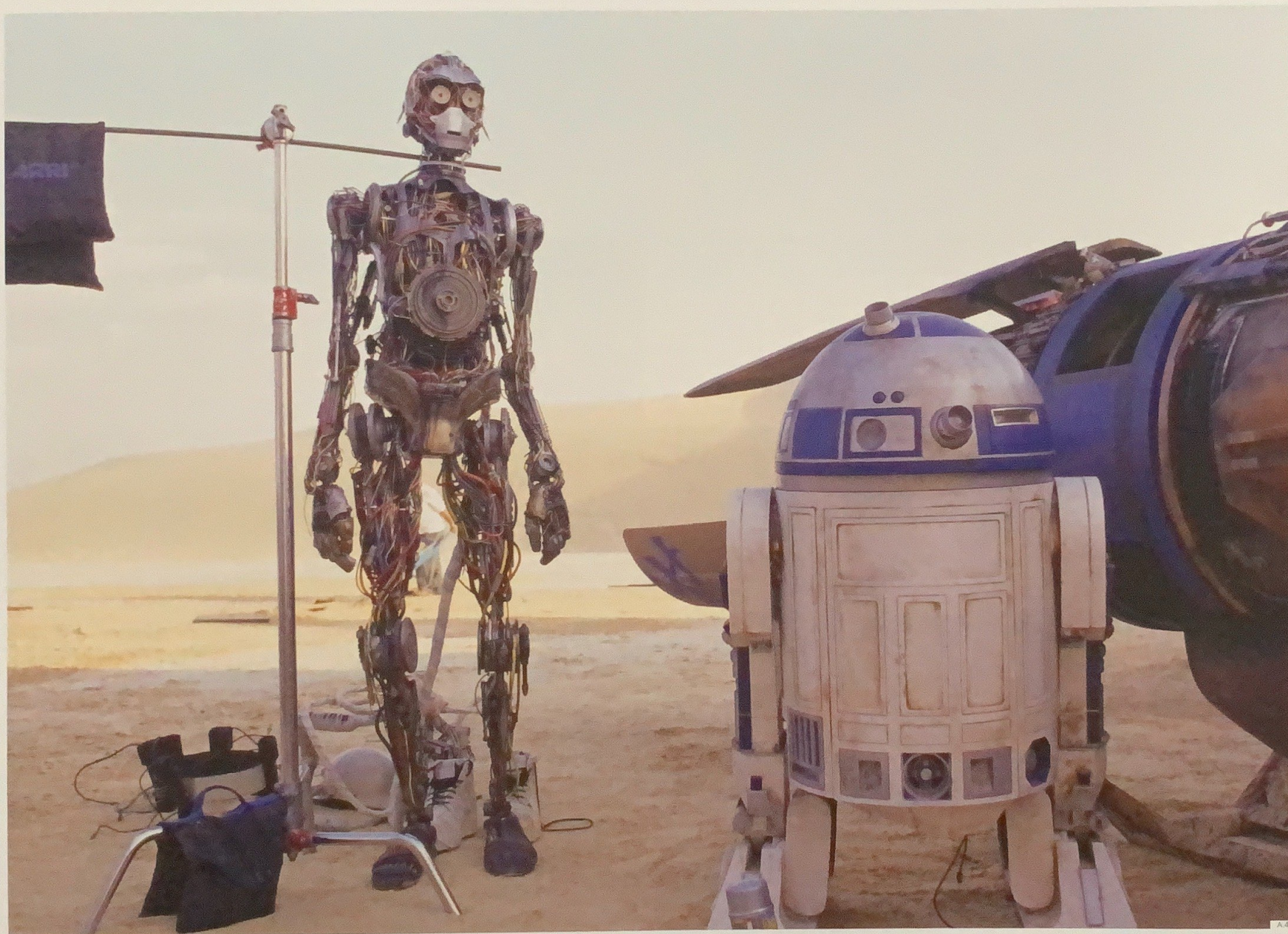
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 A.3 *Revenge of the Sith (2005)* Publicity photo of Ian McDiarmid as the Emperor.





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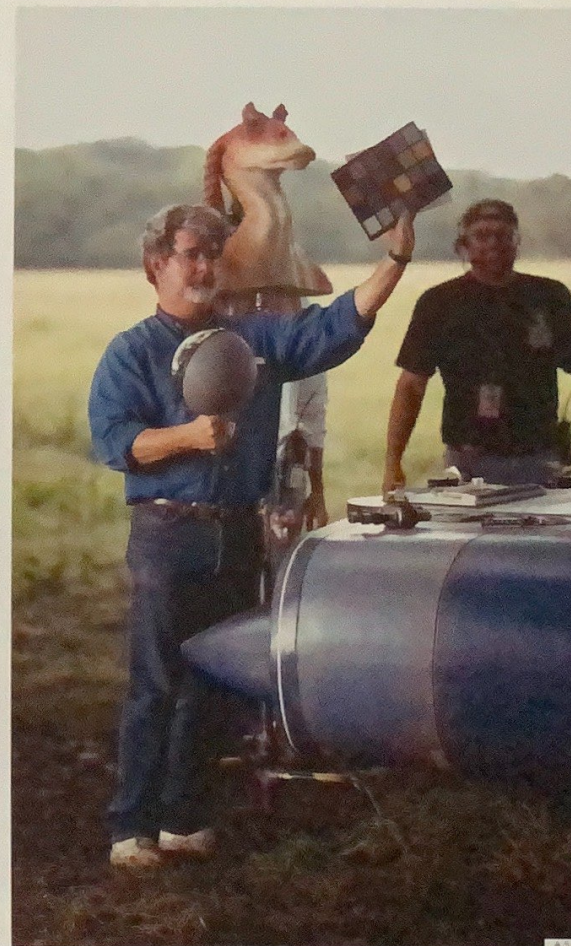
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The Phantom Menace interviews conducted by Laurent Bouzereau, Lynne Hale, David West Reynolds, Jon Shenk, Doug Chiang (April 24, May 13, 1998; February 9, 1999); Nick Dudman (August 19, 1997); Steve Gawley (May 20, 1998); Nick Gillard (July 18, August 19, 1997); Samuel L. Jackson (September 2, 1997); John Knoll (May 19, 1998); Jake Lloyd (August 27, 1997); George Lucas (June 25, August 28, September 13, 1997; January 31, 1998); Iain McCaig (May 22, 1997; May 13, 1998); Ewan McGregor (August 27, 1997); Dennis Muren (May 19, 1998); Ray Park (August 21, 1997); Natalie Portman (August 29, 1997); Jay Shuster (April 9, 1997); Scott Squires (May 19, 1998); Terry Whillatch (June 4, 1997; May 14, 1998).

Attack of the Clones interviews conducted by Jody Duncan, Lynne Hale, Don Bies (July 24, 2000); Gavin Bocquet (July 7, 2000); Ros Breden (August 16, 2000); Doug Chiang (May 17, 2000); Hayden Christensen (August 2 and 7, 2000); Rob Coleman (April 21, 2000; May 15, 2001); Nick Gillard (July 25, 2000); Samuel L. Jackson (March 31, 2001); Christopher Lee (August 25, 2000); George Lucas (July 1, November 21, 2000; March 12, September 5, 2001); Rick McCallum (August 3, 2000); Ewan McGregor (August 2, 2000; April 5, 2001); Fred Meyers (September 18, 2000); Natalie Portman (August 9, 2000; March 21, 2001); Dermot Power (July 8, 2000); David Tattersall (February 11, 2000); Ty Teiger (August 24,

2000); Peter Walpole (July 20, 2000); Dave Young (July 27, 2000).

Revenge of the Sith interviews conducted by Geoff Brown, Tippy Bushkin, Lynne Hale, Pablo Hidalgo, Duncan Sinclair, Art Department (November 18, 2002); Roger Barton (August 27, 2003); Gavin Bocquet (March 11, June 4, September 5, 2003); Ben Burtt (April 2, 2004); Rob Coleman (August 21, 2003); Ivo Coveney (June 25, 2003); Colin Fletcher (September 15, 2003); Warren Fu (January 31, 2003); Nick Gillard (September 16, 2003); Samuel L. Jackson (July 19, 2003); John Knoll (September 10, 2003); George Lucas (January 24, April 25, May 23, November 7, 2003); Iain McCaig (May 15, 2003); Rick McCallum (March 14, 2003); Ian McDiarmid (September 1 and 9, 2004); Ewan McGregor (September 2, 2003); Natalie Portman (August 12, 2003); Samantha Smith (September 17, 2003); David Tattersall (September 18, 2003); John Williams (January 5, 2005).

Paul Duncan interviewed: Mike Blanchard (August 21, 2019); Ben Burtt (March 8, 2018; August 22, 2019); Doug Chiang (August 21, 2019); Ryan Church (August 22, 2019); John Knoll (August 21, 2019); George Lucas (December 6 and 12, 2017; March 7, 2018; June 29, August 23, 2019); Rick McCallum (June 29, 2019); Dennis Muren (August 21, 2019); David Tattersall (May 5, 2020); Erik Tiemens (August 22, 2019).

This book is dedicated to the memory of F.X. Feeney, the sweetest guy, a great writer, and my best friend.

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Since this book deals specifically with the development of digital cinema, George Lucas thought it would be a good idea for me to talk to some of the pioneers who made it happen, so I would like to thank Mike Blanchard, Ben Burt, Doug Chiang, Ryan Church, John Knoll, Rick McCallum, Fred Meyers, Dennis Muren, David Tattersall, and Erik Tiemens for taking the time to tell me their fascinating stories for this book.

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The structure of the book follows George Lucas's struggle to develop and then push digital cinema into the mainstream, but it

also traces his battle to integrate his underlying philosophy into the prequel trilogy. Once again I am indebted to George for kindly allowing me additional time with him so that he could explain once more the "why" of *Star Wars*, and these conversations form the nucleus of the book.

Image Credits

Lucasfilm hired unit photographers to take stills on set, as well as "special photographers" to do shoots for magazine, posters, and formal portraits. ILM staff also made a visual record of their work. I'm happy to credit them here:

The Special Editions (1997): Sean Casey, David Owen.

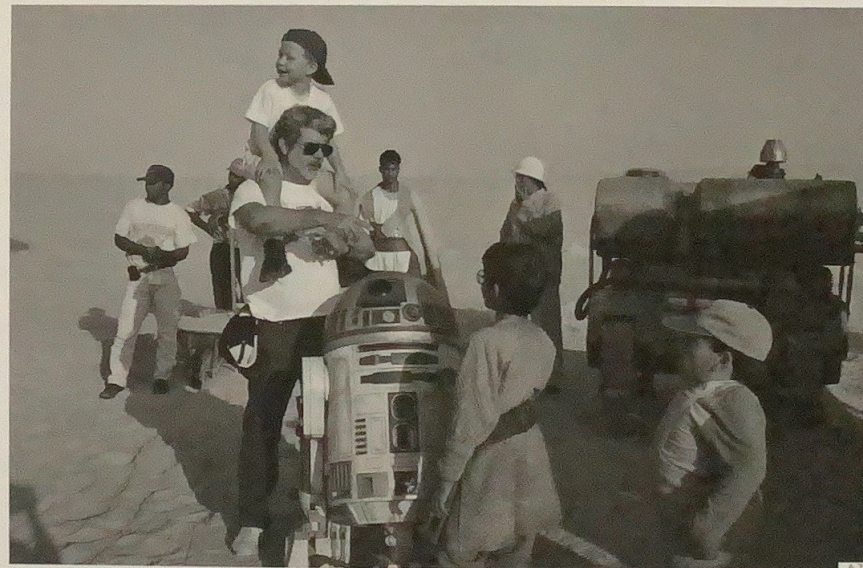
Episode I: *The Phantom Menace* (1999): Keith Hamshire (1st Unit), Jonathan Fisher, Bill Kaye, Giles Keyte, Jay Maidment, ILM Sean Casey, Alex Ivanov, David Owen.

Episode II: *Attack of the Clones* (2002): Lisa Tomasetti (1st Unit), Sue Adler (1st Unit), Keith Hamshire (Special), Barry Clack, Evelyn Rose, Paul Tiller, Giles Wesley, Ianna White.

Episode III: *Revenge of the Sith* (2005): Merrick Morton (1st Unit), Ralph Nelson Jr. (1st Unit), Keith Hamshire (Special), Frank Ockenfels (Special), Frankie Malhotra, Paul Tiller.

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EDITOR Paul Duncan/WordSmith Solutions
DESIGN Josh Baker

- A.6 *Attack of the Clones (2002)*
Hayden Christensen is photo-bombed by George Lucas.
- A.7 *The Phantom Menace (1999)* Lucas ensured that his children were with him on set while he was filming the trilogy. Here his son Jett sits on his shoulders as he directs Dhruv Chanchani and Warwick Davis in Tunisia.
- A.8 *The Phantom Menace (1999)* George Lucas directing Jake Lloyd in Tunisia.



